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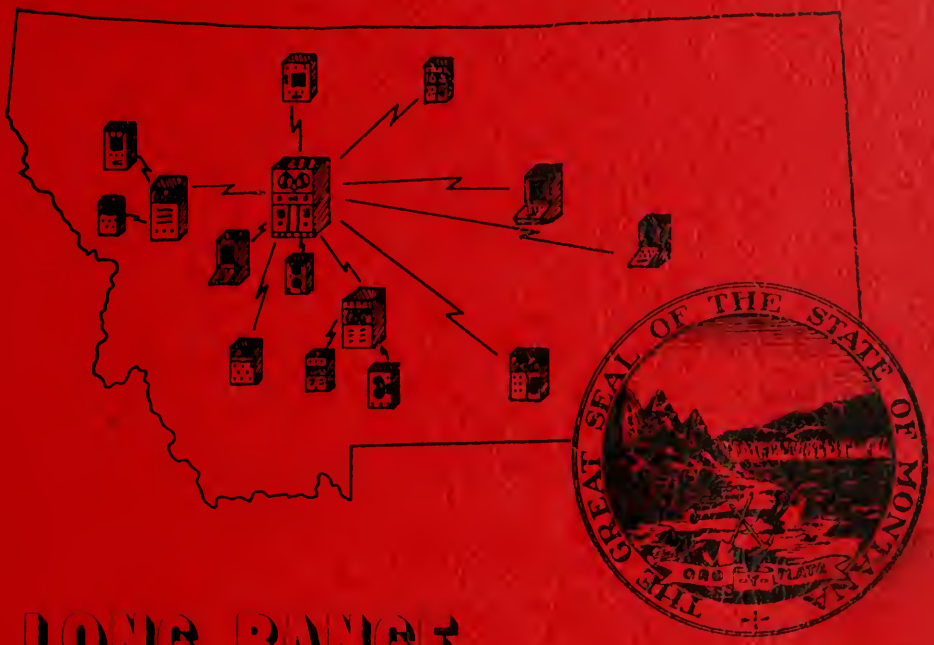
STATE OF MONTANA

DATA PROCESSING AND DATA COMMUNICATIONS



LONG RANGE INFORMATION PROCESSING PLAN

November, 1978

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STATE OF MONTANA

LONG RANGE INFORMATION PROCESSING PLAN

November 1978

PREFACE

On July 28th, 1976, the Governor issued Executive Order No. 12-77 designating the Office of Budget and Program Planning as the coordinator for data processing in the State of Montana. It is in accordance with the executive order that this data processing plan has been written to:

1) Establish guidelines for the operation and development of data processing services by or for the State of Montana.

2) Set priorities for the development and acquisition of data processing systems.

3) Establish procedures for the procurement of data processing equipment.

4) Set guidelines for the location and staffing levels for all data processing services.

The successful achievement of these objectives will assure that we meet our general goal to provide effective data processing and data communications capabilities consistent with the needs and priorities of the State of Montana.

David M. Lewis

David M. Lewis, Director
Department of Administration

ACKNOWLEDGEMENTS

STATE OF MONTANA

THOMAS L. JUDGE — GOVERNOR

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OFFICE OF BUDGET AND PROGRAM PLANNING

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Roy Hickman	Department of Labor and Industry
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STATE OF MONTANA
LONG RANGE INFORMATION PROCESSING PLAN

TABLE OF CONTENTS

i	EXECUTIVE SUMMARY
I	STATE INFORMATION PROCESSING PROGRAM ADMINISTRATION
II	CURRENT SERVICES AND FUTURE REQUIREMENTS
III	LONG RANGE PLANNING
IV	BUDGET SUMMARY (BIENNIUM PLAN)
V	LONG RANGE PLANNING UPDATING AND CONTROL

STATE OF MONTANA
LONG RANGE DATA PROCESSING PLAN
EXECUTIVE SUMMARY

PURPOSE

The State of Montana currently employs approximately 450 people directly involved in data processing. The current data processing budget is estimated to be $11,200,000 per year. These figures represent the aggregate of all data processing expenditures from all state agencies.

Montana's involvement and commitment to this increasingly complex technology is only partially evident when we analyze the magnitude of this annual expenditure. In order to fully recognize the dependency on computers and automated systems, we must also analyze the benefits to the operation of state government and the public itself. These benefits are the justification for the commitment and subsequently the expense. Unfortunately the benefits of computer technology are difficult to quantify in terms of dollars. If there was a tangible means to measure the dollar value of automated systems such as: workers' compensation, statewide budgeting and accounting, legislative bill drafting, vehicle registration, highway accident analysis, and many others, then a clear evaluation of benefits versus costs would be possible. The purpose behind the efforts that have gone into the preparation of this data processing plan is to ensure that all data processing activities and expenditures are directed toward achieving the most favorable benefit/cost ratio.

This plan is the sequel to the "Long Range Information Processing Plan - Phase I" published in December, 1976. In many respects this plan may be considered "Phase - II" of the original effort. However, it should be considered the beginning of a continuous long range (five year) and biennial planning process that will be updated regularly on a biennial basis.

SCOPE

The specifications of managing a comprehensive data processing program (the aggregate of all data processing activities in state government) are addressed in this document. Emphasis is on the tactical day-to-day requirements of managing an extremely complex interrelationship of people, computers, and telecommunication facilities. This plan is intended to be useful to all levels of management from the executive level down to the technician who needs to refer to the documented way of doing information processing business in this state.

The plan has been designed to provide general direction and projections of our needs for the next five fiscal years. The rapid changes in Montana's information processing needs and changes in computer technology make it difficult to plan in detail for a full five year period. Therefore, detailed planning has been limited to the period of time through June 30, 1981.

GOALS

The following general goals for managing data processing have been established.

1) Provide effective data processing and data communications capabilities consistent with the needs and priorities of the State of Montana.
2) Provide for cost effective use of the state's data processing resources.
3) Insure the security and privacy of data which is manipulated and stored within the state's data processing systems.

The thrust of this entire planning document is directed towards achievement of these three general goals and a series of specific supporting objectives. Many of the objectives stated by various levels of management in Chapters 1 and 3 are technical in nature and therefore are not listed in this

section. However, the reader may wish to become familiar with the magnitude of the task of managing data processing by scanning the list of objectives in the chapters mentioned.

POLICIES

A set of high level state data processing policies has been established. These policies are necessary to direct the overall Data Processing Program in a way that provides a consistent set of rules and procedures for all information processing groups in state government. These policies are listed in Chapter 1. Some of the more significant policies deal with issues such as:

- The state will centralize large scale batch processing computer systems and encourage the distribution of data entry, editing and job submission functions.
- The use of Data Base Management technology will eliminate unnecessary duplication of data and reduce costs.
- Security and privacy of data will be tightly controlled through the computer system beginning and ending with the user.
- The professional development of people responsible for developing maintaining, operating, and managing automated services will be carried out in a manner that will ensure effective use of equipment and software and also minimize costs.
- Data processing resources will be allocated and controlled on the basis of each application's priority to the State of Montana.

REQUIREMENTS

Chapter 2, "Current Services and Future Requirements" provides a basic assessment of Montana's current and future data processing needs. Priorities are listed for the following:

- Current operational automated systems
- Automated systems currently under development
- Future automated systems

These priorities represent the importance of each application to state government as a whole. Conflicts in scheduling resources will be resolved on the basis of these "state" priorities. The list of prioritized appli-

cations will serve two purposes in the planning process. One purpose is the establishment of a mechanism for resolving scheduling conflicts and the second is to provide a basis for planning and budgeting for additional resources. The projected requirements for data processing resources (equipment and people) will be based on the future systems listed in this document coupled with thorough analysis of past experience.

DETAILED PLANNING

Detailed planning and budgeting will be done in a manner that lends itself to a cooperative approach between the information processing groups and the central data center. The entire process will be monitored and managed as a State of Montana Data Processing Program. Chapters 3 and 4 of this plan provide a long range, and short range (biennium) view of the efforts and expenses that the data processing service centers in this state will incur during the next few years in our concerted attempt to meet the goals of the Data Processing Program.

There are two important elements of the long range plan that will affect all other aspects of data processing.

1. Distribution of data entry, data editing and job submission equipment will continue to be the mode of operation. This practice will have the effect of bringing the user closer to the central computer in a way that will improve the effectiveness of the dependent processes.

2. Centralization of large scale computers and data storage devices will be accomplished through the establishment of one central processing center managed by the Department of Administration. A central staff of programmers and analysts will continue to be managed by the Department of Administration to provide development services.

The benefits of planning our data processing activities to strengthen these two concepts will be significant. The user will have control of their own

activities through hands-on access to equipment located close to their office. Centralization of the large scale (expensive) equipment will provide economies in the form of:

1. Reduced duplication of software
2. Reduced costs
3. Reduced manpower to operate and support the large complex systems
4. Around-the-clock operation and availability

A comprehensive, reliable telecommunications network will be an important part of our future activities. This communication link will tie the distributive work-stations and terminals located throughout the state to the central data center in Helena.

ANTICIPATED PROBLEMS

Data processing activities should be managed in a way that will balance the requirements for increased availability (improved turnaround-time, response time and easy access to data) with the need for reduced costs (lower rates) and a third factor: increased security requirements. Problems will occur as data processing managers attempt to optimize one of these areas without considering the adverse impact on the other two. Data security may prove to be a very expensive process, depending on security/privacy legislation of the future. Increased security controls will affect availability of computer systems and data by making the whole process more complex than it is today.

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CHAPTER I
STATE INFORMATION PROCESSING PROGRAM ADMINISTRATION

TABLE OF CONTENTS

1.1 INTRODUCTION
1.2 POLICIES
1.3 GOALS AND OBJECTIVES
1.4 PROGRAM DIRECTION

INTRODUCTION

The State of Montana has committed itself to the use of computers and automated systems in many areas. Therefore, a commitment must be made to manage the resources necessary to provide the required services. The development of a Long Range Information Processing Plan has been an important step towards living up to our commitment.

The initial planning effort resulted in the "Long Range Information Processing Plan Phase I", published December, 1976. The Phase I plan was an important step towards the development of coordinated management of computer resources and information processing in general from a statewide program point of view. Some important achievements of Phase I were: 1) The establishment of the state data processing program and its coordinator in the Office of Budget and Program Planning; 2) the definition of responsibilities of the program coordinator and other data processing groups; 3) the permanent establishment of the Montana Data Processing Advisory Committee (MODPAC); 4) formalization of the service role that the Department of Administration has assumed; 5) the establishment of state level priorities to govern data processing projects.

Phase I of the state's long range information processing planning effort was instrumental in setting the stage for the preparation of this document, which deals with the specifics of managing a comprehensive data processing program. This plan emphasizes the tactical day-to-day requirements of managing an extremely complex interrelationship of people, computers, telecommunications and thousands of individual programs. It should be useful to all levels of mangement down to the technician who might want to refer to the documented way of doing information processing business in this state. The scope of this plan includes general goals and objectives to be achieved in the next five year period. Detailed planning and budgetary information have been included to provide direction to the total data processing program through the next biennium.

The data processing policies and guidelines established in this plan shall apply to all state supported data processing services.

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POLICIES

The following policies are intended to set precedent from a statewide perspective for all information processing groups.

PRIORITY SETTING AND SCHEDULING

Increased emphasis on centralization of computer processing will result in conflicts involving the allocation of resources. In order to resolve these conflicts in an orderly way and to ensure that the applications most important to the State of Montana are processed according to schedule, a priority processing technique has been established. When conflicts occur the data center will process applications in priority order based on priority established by the Data Processing Program Coordinator in the Office of Budget and Program Planning.

A scheduled production job processing procedure is to be managed by the Central Data Center. The user is responsible for establishing their applications as scheduled production systems. The data center will make service commitments in most cases based upon turnaround requirements of the user. If the system is not a scheduled production system it will be considered demand processing. Demand processing will compete for data processing resources within the data center based on the job processing priority assigned and paid for by the user.

Priorities for application development projects will also be established by the Data Processing Program Coordinator and used to resolve resource allocation and scheduling conflicts.

CENTRALIZATION/DECENTRALIZATION

The general direction of the data processing industry today couples large central computer processors with intelligent terminals (small computers) to form a computing network. Ideally, the user should benefit from hands-on local control of the processes their business depends on. The user also receives central services that could not be afforded on an individual basis. The computing network will be most efficient functionally and economically when optimization of central and distributive services and costs is achieved.

The State of Montana will strive to optimize the service benefits and cost effectiveness of combining centralized large scale batch processing and decentralization of user interface functions such as data capture, data editing, job submission, and special output processing. Costs and quality of service will be analyzed and evaluated on the basis of what is best for the State of Montana. Considerations such as: security, backup or recovery time, responsiveness (turnaround time and on-line response time), number of data processing employees required to support the overall computing network, and the overall data processing program budget will govern the decision making process related to equipment acquisition and position control.

The Data Processing Program Coordinator will exercise authority in equipment acquisition and position control processes in a manner designed to achieve the best balance of centralization and decentralization of equipment, manpower and processes for the State of Montana. The criteria governing the management of this task are subject to change as computer technology changes, and the needs of the State change.

CENTRALIZED MANAGEMENT OF THE STATE TELEPROCESSING NETWORK

Data processing applications which involve a communications network require a substantial commitment of data processing equipment and personnel to provide a reliable service to the data processing user. There are enormous benefits to be gained by the users of data processing from a coordinated data communication system which will take advantage of such technical matters as circuit arrangement and utilization, multiplexing, concentration, preprocessing switching and alternate routing. The organization of these data communications resources in an effective and efficient manner requires a management overview of the entire State data communication facility. The Department of Administration, Computer Services Division, is responsible for the planning, implementation and operation of the State's data processing network.

STATEWIDE STANDARDS

A statewide information systems standards program is to be implemented and managed by the Computer Services Division of the Department of Administration.

The standards program will be administered in a manner that will ensure uniformity in developing, operating and documenting information processing systems, throughout State government. The effective use of standards will minimize unnecessary expenditures related to poor systems design, incompatibilities, and the continuing maintenance of complex systems. Active participation by other departments in the development of standards is encouraged.

PROFESSIONAL DEVELOPMENT

The State of Montana is committed to the use of automated systems (computer technology) for many important functions of state government. These automated systems and the technology necessary to support them are constantly changing and increasingly complex. Therefore, the people responsible for developing, maintaining, operating, and managing must be adequately trained.

All Information Processing groups and the Central Data Center are encouraged to develop a professional growth and technical training program for their employees.

Training should be carried out in a manner which ensures the effective use of equipment and software and also minimizes costs. Local in-house self taught courses administered by the State Personnel Division, should be utilized whenever possible. The next most efficient method is to bring in an instructor to teach his or her specialty to as many state people as possible.

The Central Data Center will conduct an orientation class for all new data processing employees.

DATA PROCESSING MANAGEMENT GROUP

A committee of data processing managers has been designated the "Data Processing Management Group". There are currently nine members plus the chairman, all selected by the Data Processing Program Manager. The future makeup of this committee may be changed by the Data Processing Program Manager.

The participation of this group of individuals in the decision making and planning of statewide data processing activities is essential to the effective utilization of computers and related equipment in the State of Montana. The meetings of this group should provide an opportunity for free exchange among technically oriented data processing managers on subjects that managers should be aware of and encouraged to state their individual points of view.

The responsibility of the Data Processing Management Group is to review and make recommendations on issues that affect the general state government data processing community and to participate in the statewide data processing planning effort by interacting with agencies that have statutory responsibility for managing the central service facility and administering the Statewide Information Processing Program.

The authority of the Data Processing Management Group is limited to reviewing and recommending policies that affect the state's information processing community.

TECHNICAL SUPPORT

Technical support is an important function in the overall information processing program. The complexity of computer hardware/software necessitates technical consultation technical problem resolution, planning and evaluation on a continuous basis. Due to the specialized nature of the services required one central group in the Computer Services Division, Department of Administration will be responsible for this support.

COST RECOVERY

Cost recovery (cost distribution of information processing services) is to be accomplished by charging for services rendered in a way that ensures equitable distribution of all service center costs. Each service center must justify its cost recovery rates by documenting the basis for cost recovery for each function provided. This documentation must be available for all users, auditors, budget analysts, and interested parties.

Note: 1. "All service center costs" are to include interest, depreciation and administrative overhead as legitimate recoverable expenditures.

2. Revolving accounts, when utilized by service centers for cost recovery, must be managed so that the cash balance each month does not exceed 45-days operating expense exclusive of replacement reserves and at year end closing.

DATA BASE AND SHARED DATA FILES

Repetitive duplication of data collection processes and on-line storage of common data, that could easily be shared by several agencies, should be avoided. The sharing of entire data files or certain data elements in a file must be encouraged. This practice will save a significant amount of dollars that would otherwise be spent in a needless repetitious manner.

The cost associated with the on-line storage of shared data will be distributed to the various users of the data in as equitable a manner as possible by the central data center.

Policy related problems and conflicts that occur related to sharing data will be resolved by the State Data Processing Program Manager. Technical data base management and general data resource management will be the responsibility of the central data center.

PERFORMANCE MEASUREMENT OF SERVICES

The central data center and all other data processing groups servicing end users must establish a performance measuring/reporting mechanism to ensure compliance to pre-established services agreed to by the user and the servicing center. The services agreed to should establish commitments and associated costs. The performance measuring/reporting mechanism should be managed in a manner that will clearly identify that service commitment levels are being met.

SECURITY AND PRIVACY

All persons associated with personal data are responsible for safeguarding and confidentiality of the data thus ensuring the privacy of the data subjects. The protection of an individuals' privacy must be considered throughout the entire computer system beginning and ending with the user. Security is largely a technical and management matter, whereas privacy is largely a behavioral and legal matter.

Information privacy has been defined as the right of an individual or an organization:

(1) to determine for themselves when, how and to what extent information about them is communicated or used by others;
(2) for protection from harm or damage as a result of the operation of an information system; and
(3) for protection from unwelcomed, unfair, improper, or excessive collection or dissemination of information or data about themself.

CONTROL OF DATA PROCESSING RESOURCES

The use of data processing hardware that has been purchased or is supported by state funds is subject to the following guidelines:

1. The use of state data processing hardware shall in no way be in competition with the data processing services offered by private enterprise.

2. The use of the data processing service must be related to the primary function or responsibility for which the service center was originally established.

3. If the entity using the data processing services is not tax supported, the applications must be "one-time" applications justified by exceptional conditions.

The policies stated in this section may be addressed further by contacting/writing the Data Processing Coordinator who resides in the Office of Budget and Program Planning.

OBTAINING SERVICES FROM THE PRIVATE SECTOR

State agencies shall not obtain data processing services from a private bureau without first receiving written approval to do so from the Data Processing Coordinator in the Governor's Office of Budget and Program Planning. It may be necessary or highly desirable to use a commercial computer service, but in order to coordinate the State's data processing resources the use of these services must be approved by the Data Processing Coordinator.

EDUCATION AND TRAINING SERVICES

The State of Montana contracts with many private individuals and organizations for developing automated systems. The following policies shall apply to all educational and training services the state offers in the field of data processing.

Education

1. Regularly scheduled education classes administered by the Personnel Division will not normally be opened to consultants or contractors.
2. Special training may be available from a state agency service group when the following conditions are met:
   A. Outside training is not available within the time frame available.
   B. The contracting agency requests the service.
   C. Time is available considering the priorities of other requirements.
   D. The consultant will pay the prevailing Information System Division's hourly rate for System Maintenance Support.
3. Future contractual agreements must spell out the fact that the contracting firm must provide specific specialty services and contractor training will be solely the responsibility of the contractor. The state has no obligation and should not be relied on to train the contractor or consultant in any case.
4. Some provision should be made by the Data Processing Coordinator in the Office of Budget and Program Planning for existing contracts to insure that specialty deficiencies on the part of

existing contractors will not jeopardize the quality of the final product for the contracting agency.

Technical Consultants

The consulting services of the state's technical support groups, such as Data Base Administration and Technical Services, will be provided to private consultants on a "free" basis when the following conditions occur:

1. The services are requested by the contracting agency.
2. The services are within te realm of normal "free" services to governmental agencies.
3. There will be no "problem program" coding performed by the service group.

Chargeable Services

When services are requested by any development group that do not fall within the realm of "free" services, the service group will bill the requesting state agency at the prevailing Information System Division's hourly rate for System Maintenance Support. These services will be provided to a private consultant when:

1. The contracting state agency requests the service.
2. All other "state development groups" and other higher priority groups have been serviced satisfactorily.
3. The coding that is requested cannot be performed by any other reasonable means.

Closing

Questions concerning this section are to be directed to the Data Processing Coordinator in the Office of Budget and Program Planning.

GOALS AND OBJECTIVES

The mission of this plan is to provide direction to Montana State Government in the efficient and coordinated utilization of data processing equipment, techniques, and personnel. In order to accomplish this mission the following general data processing goals and objectives have been identified:

Goal 1

- Provide effective data processing and data communications capabilities consistent with the needs and priorities of the State of Montana.

Objectives:

- Centralize general state government computer operations in the Department of Administration (Computer Services Division) by October 1, 1978.

- Establish and publish a priority list of user requirements in order to limit conflicts concerning the use of data processing resources effective with the publication of this plan.

- Coordinate data processing planning and budgeting to eliminate duplication of effort and to insure that service is consistent with user requirements in the 79-81 biennium budget.

- Implement and maintain state processing policies and standards for service center operation and management effective with the publication of this plan.

- Encourage distributed or mini computer use where economical, advantageous, feasible, and appropriate.

- Establish a liaison between the data processing management and management of state government with the procedure documented and implemented by January 1, 1979.

Goal 2

. Provide for cost effective use of the state's data processing resources.

Objectives:

. Justify the acquisition of new data processing equipment and software, through the Data Processing Coordinator.

. Acquire data processing and data communication equipment competitively.

. Encourage the reduction of obsolete computers.

. Reduce duplicate data communication resources by sharing the resources at feasible locations through a common communication network to be fully operational by July 1, 1979.

. Reduce redundant data in application systems with the implementation of data base technology by January 1, 1979.

. Develop/support statewide system development methodologies/techniques and standards for data processing systems.

Goal 3

. Insure the security and privacy of data which is manipulated and stored within the state's data processing systems.

Objectives:

. Establish adequate physical facility security and recovery procedures for data processing service centers by October, 1978.

. Continue to provide and enhance data processing users with a standard set of security functions to insure the privacy of all user information managed by the data center.

. Develop a standard policy for emergency recovery to be fully operational by January 1, 1979.

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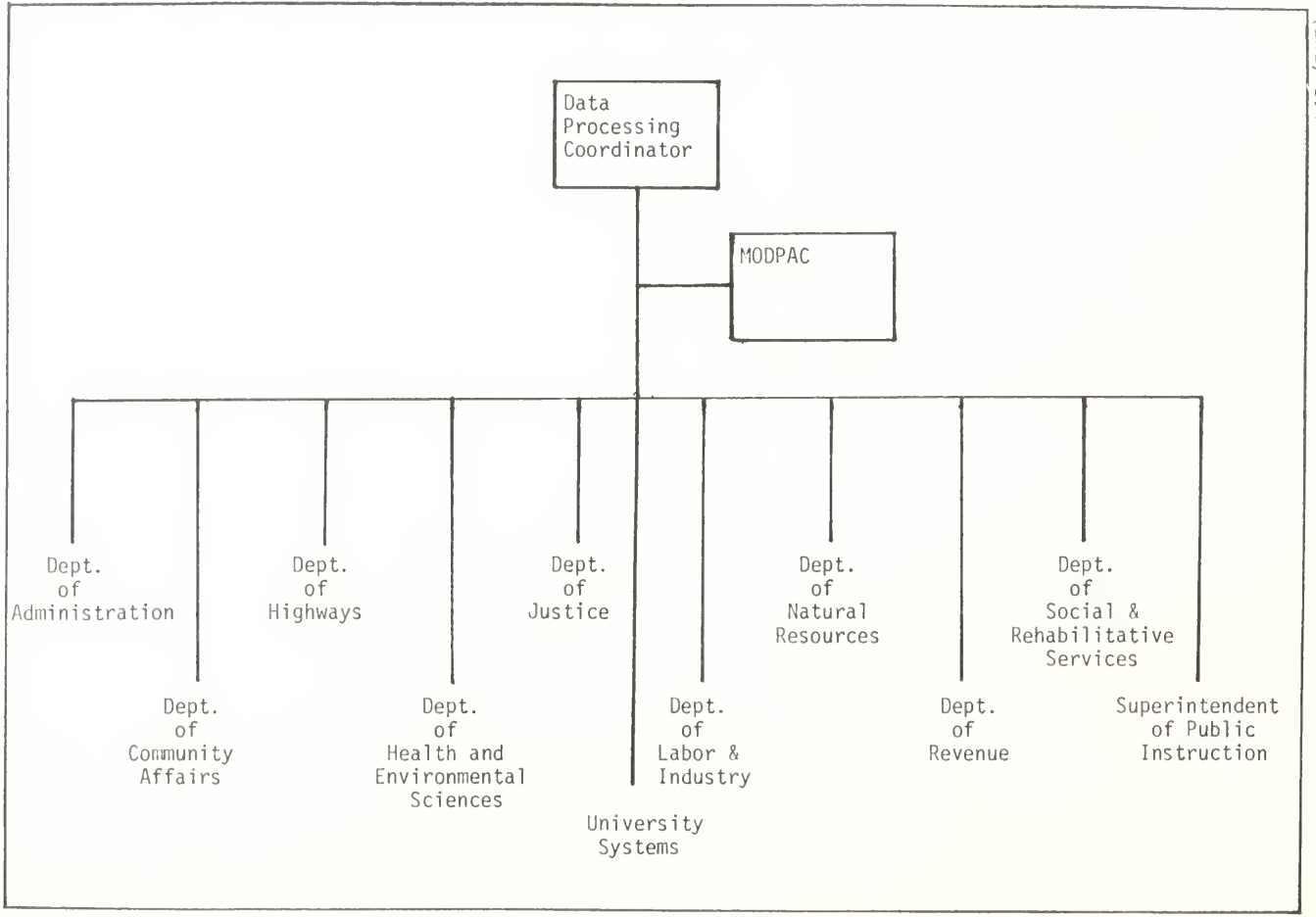
PROGRAM DIRECTION

The direction of data processing within state government will remain consistent with the goals and objectives defined in Chapter 1 of this plan. In order for the state to manage its future data processing requirements effectively, there must remain a balance between the resource capabilities and state's ability to support those capabilities financially.

The Data Processing Coordinator is responsible for the statewide data processing budget, establishing the data processing priorities for the state and the final decisions on all data processing matters. The management of all the central data processing resources to accomplish the state's data processing goals and objectives is assigned to the Department of Administration. The data processing management group is charged with reviewing the state's data processing operation and advising the Department of Administration.

The Montana Data Processing Advisory Committee (MODPAC) through requests made by the Data Processing Coordinator will evaluate major points of direction. Their recommendations play a major role in the future of Data Processing.

DATA PROCESSING



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CHAPTER II

CURRENT SERVICES AND FUTURE REQUIREMENTS

TABLE OF CONTENTS

2.1 CURRENT LEVEL OF SERVICES

2.2 APPLICATIONS INVENTORY (PRIORITIZED)

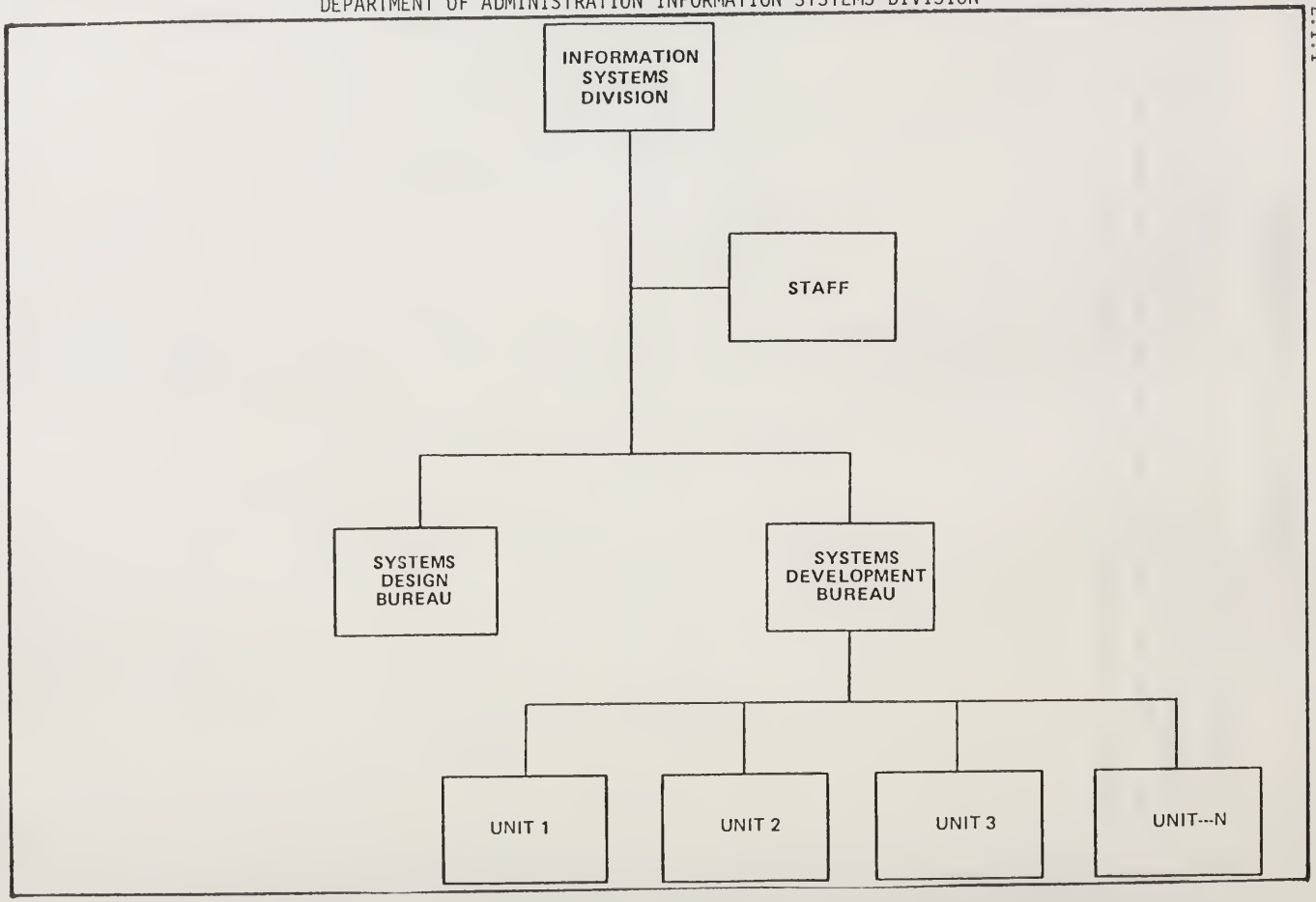
2.3 FUTURE SYSTEMS REQUIREMENTS

2.4 TRENDS AND FUTURE DEPENDENCIES

CURRENT LEVEL OF SERVICES

The following pages deal with the current level of services provided by information processing groups (those participating) and the Central Data Center. These services are summarized and will be expanded further as future user requirements are defined and become reality.

ORGANIZATIONAL CHART
INFORMATION PROCESSING
DEPARTMENT OF ADMINISTRATION INFORMATION SYSTEMS DIVISION



DEPARTMENT OF ADMINISTRATION
INFORMATION SYSTEMS DIVISION

. CURRENT LEVEL OF SERVICES

. Overview

The primary purpose and objective of the organizational structure of the Information Systems Division (ISD) is to provide optimum support to customers. The division is functionally oriented to meet this objective. The organization has been developed to provide the flexibility required to respond to a constantly changing environment. ISD was initially established, and will continue to function, as a service organization for all agencies of state government.

. Administrator

The division administrator is responsible for each functional area within ISD. The policies, goals and objectives of the division are coordinated and controlled by the administrator. Interaction with various state agencies and the ongoing communication with other information processing areas within the state are performed at this level.

. Staff

The support necessary to operate the division on a day-to-day basis is provided by this function. The primary responsibilities of the staff function include servicing the internal operations within ISD and special support needs of the division administrator.

- Systems Design Bureau

  All requests for systems design and enhancements are coordinated by this bureau. Each new system, enhancement to an existing system, or significant modification is reviewed by systems design personnel. The Systems Design Bureau is responsible for the initial evaluation of all customer requests; the preliminary system analysis; the feasibility study; the requirements definition and the functional business design of the system. The initial phases of every request are the responsibility of the personnel assigned to this bureau.

- Systems Development Bureau

  The Systems Development Bureau is responsible for the final design, programming, and implementation of all systems originating from the Systems Design Bureau. The ongoing support of systems in production are performed by personnel within this bureau at the unit level. Each unit is comprised of individuals with system responsibility determined by application relationships, resource availability and level of experience in relation to application complexity.

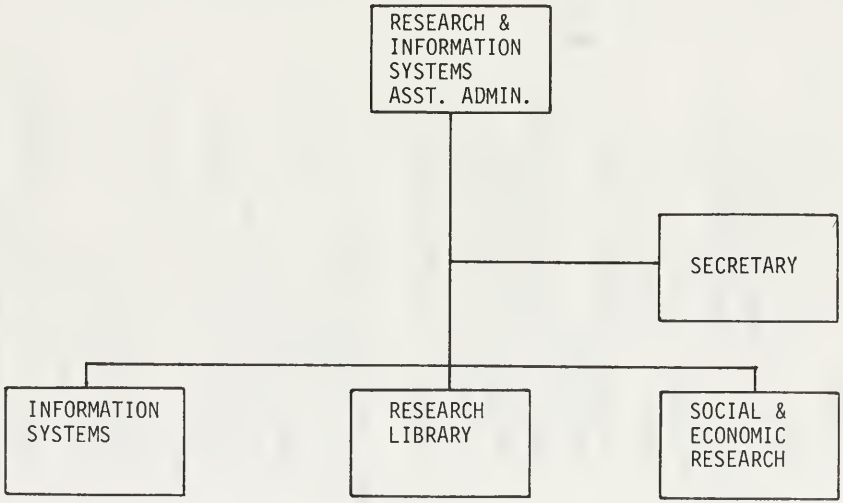
- Operational

  ISD uses RJE, CRJE and telecommunications services, but does not provide these same services to any other agency.

- Other Services

  All systems developed by ISD are eventually turned over to the Computer Services Division whereupon they become a 'production system'. The responsibility for maintaining system controls and processing schedules fall under CSD's functional responsibilities. ISD provides technical support in case of a system malfunction, but is minimally involved in the day-to-day operation of application systems. A "Customer Information Guide" was made available in May of '78 to provide users with the total service capabilities of ISD.

ORGANIZATIONAL CHART
INFORMATION PROCESSING
DEPARTMENT OF COMMUNITY AFFAIRS



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DEPARTMENT OF COMMUNITY AFFAIRS

- CURRENT LEVEL OF SERVICES
  - INFORMATION SYSTEMS
    - Data File Processing
      - Census
      - Economic
      - Migration
      - Energy
    - Library Maintenance, Reference Service & Document Retrieval System
    - Publications
      - Montana Data Book
      - County and Regional Profiles
      - Map Profiles
      - Montana Manufacturers Directory
      - Information Source Catalogs
      - Montana Population Estimates
      - Economic Conditions in Montana
  - ECONOMIC AND SOCIAL RESEARCH
    - Population Estimates & Projections
    - Economic Modeling
      - Input/Output Development
      - Econometric Models & Submodels
    - Analysis of Data Base Files
      - Waybill sample file
      - 10% Migration File
    - State Economy Studies
      - Report to Executive & Legislature
    - Cost of Governments Study
    - Economic Development Research
      - Manufacturers Survey
      - Enterprise Cash-Flow Models
    - Statistical Analysis

- . Math-Stat Conversion Project
- . Indicator Project
- . County Clerk & Recorder Analysis
- . State Sub-Grant System
- . Federal Outlays Project II
- . 1980 Pre-Census Planning

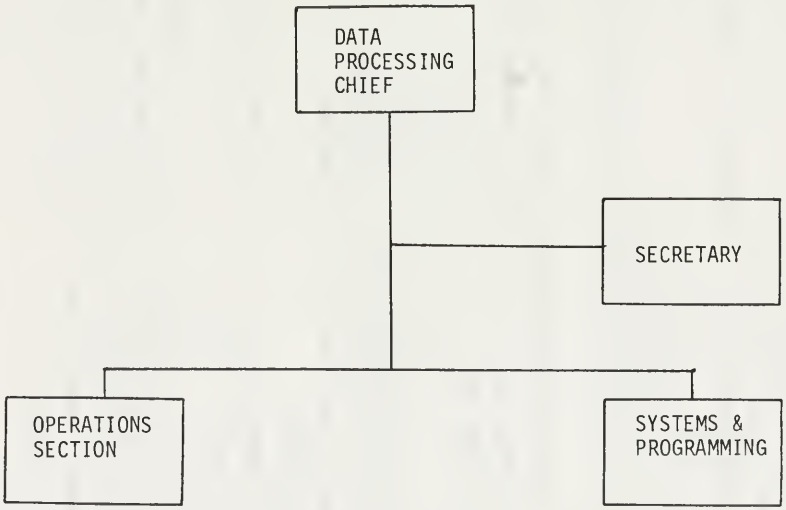
- . LAND AND GEO-DATA SYSTEMS
  - . Data File Acquisition
    - . State Lands Files
    - . Federal Land Files
    - . Mineral Ownership Files
    - . Subdivision Files
    - . Ground & Quality of Water
    - . Soils/Vegetation Project
    - . Recreation Files
  - . Geo-Data System Development
    - . Grafix System
    - . Composite Mapping System (CMS)
  - . Computer Map Preparation
    - . County Base Map Series
    - . Resource Overlay Maps
  - . Montana Map Index System
  - . U.S.G.S. Topographic Map Depository

- . SERVICE PROJECTS
  - . Statutory Information Retrieval System (SIRS)
  - . Federal Aid Monitor System (FAMS)
  - . Mailing Label System
  - . GRIPS (Personnel Inventory & Project Accounting) System
  - . EARS (F & G Dept. Personnel System)
  - . Native American Talent Bank
  - . Committees & Boards

(End) 2.1.2

- Advisory Council on Vo-Education
- Montana Energy Advisory Council
- Montana Map Advisory Committee
- BEA Advisory Committee on Migration Data
- Montana Statistical Association

ORGANIZATION CHART
INFORMATION PROCESSING
DEPARTMENT OF HIGHWAYS



2.1.3

(End) 2.1.3

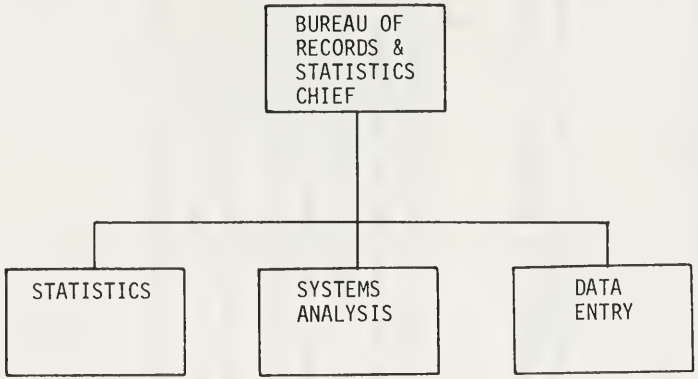
DEPARTMENT OF HIGHWAYS

- CURRENT LEVEL OF SERVICES
  - Operational Section
    - The operation of an RJE Station.
    - Scheduling
    - Data entry services
    - Job setup
    - Training, education, and assistance in the use of the facilities
    - Backup - recovery procedures
    - Output handling like bursting, deleaving, interpreting, etc.
    - Ordering and maintaining supplies of forms, etc.
    - Providing technical assistance regarding JCL, errors, utilities, etc.

  - Systems and Programming Section
    - System analysis and design of the simplest to the most complex requirements of the department.
    - Programming
    - Maintenance support of more than twenty-three hundred programs.
    - Planning and scheduling projects for development
    - Making recommendations regarding equipment needs
    - Providing technical advice and training to various department users in areas like CICS, CRJE, mini computers, new equipment, etc.

  - Data Entry
    - Provide data keying services
    - Provide data verifying services
    - Provide technical advice for data formats

ORGANIZATION CHART
INFORMATION PROCESSING
DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES



(End) 2.1.4

DEPARTMENT OF HEALTH AND EVIRONMENTAL SCIENCES

. CURRENT LEVEL OF SERVICES

. Development:

Feasibility studies, cost estimation, system design and analysis, requirements planning, programming using COBOL or FORTRAN for regular jobs and various software packages (TPL, MARK IV, SPSS, DYL250, DYL260) and BASIC for one-time requests.

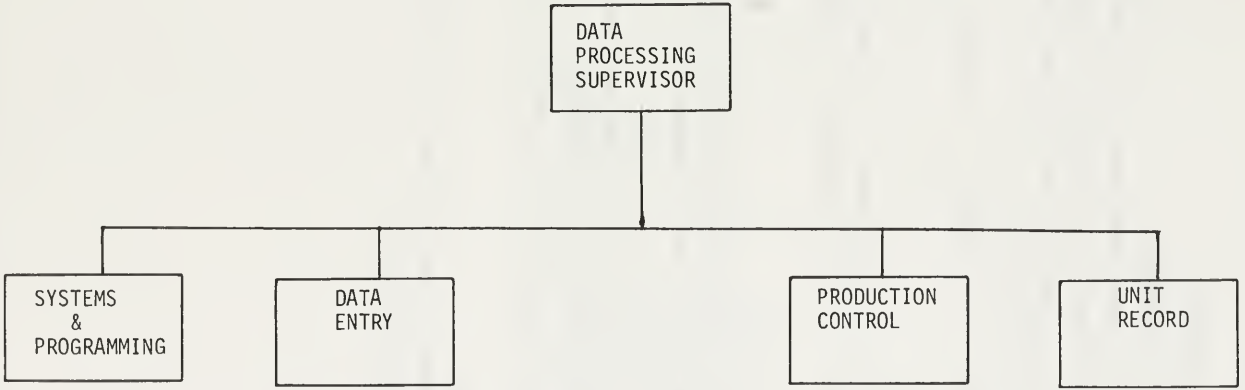
. Operational:

Key-entry using IBM 129's, CRJE using a Mountain Bell A043 terminal, card sorting on a IBM 083.

. Other Services:

Consultation regarding future data processing applications, existing ones, and applications being developed by contracted consultants; systems and program maintenance originally developed in-house or elsewhere; I/O Control Statistical Consultation of programs written for Health Department bureaus; supervision of data processing activities within the Department; cost accounting of data processing done at Department of Administration for the Department.

ORGANIZATION CHART
INFORMATION PROCESSING
DEPARTMENT OF LABOR & INDUSTRY EMPLOYMENT SECURITY DIVISION

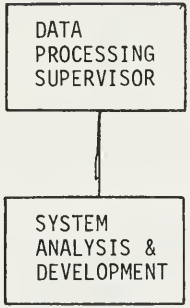


(End) 2.1.5

EMPLOYMENT SECURITY DIVISION

- CURRENT LEVEL OF SERVICES
  - Systems and Programming
    - Satisfies the request made by all users
    - Sets job processing priorities for computer usage
    - Makes recommendations to management concerning hardware selection
    - Maintains all programming requirements for ESD
  - Data Entry
    - Provides the major share of key punching for the Employment Security Information Processing
  - Production Control
    - Receives and distributes data entry requests
    - Submits ESD processing requests to the Central Data Center
    - Assists system and programming in data set management
    - Schedules job processing for ESD
    - Maintains backup files for ESD security
  - Unit Record
    - Performs all tasks related to unit record system processing for ESD

ORGANIZATION CHART
INFORMATION PROCESSING
DEPARTMENT OF NATURAL RESOURCES & CONSERVATION



(End) 2.1.6

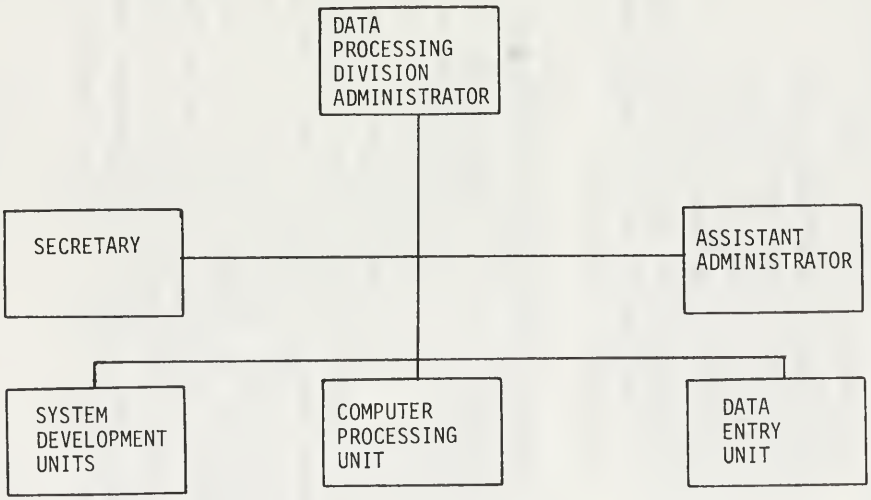
DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION

. CURRENT LEVEL OF SERVICES

Information Processing provides/coordinates with I.S.D., C.S.D., and M.S.U. for all necessary services. Services are essentially in (but not limited to) systems analysis, requirements determination, systems design, programming, testing, implementation, production, maintenance and some data entry.

The major service function is insuring the integrity of the systems and providing data processing support as it is needed.

ORGANIZATION CHART
INFORMATION PROCESSING
DEPARTMENT OF REVENUE



DEPARTMENT OF REVENUE

. CURRENT LEVEL OF SERVICES

. System Development Units

These units are functionally responsible for:

- . Performing feasibility studies
- . Designing data processing systems
- . Developing computer programs
- . Evaluating programs and systems
- . Developing system documentation
- . Providing ongoing system operational support
- . Providing analysis and programming support for system maintenance and enhancement

Four system development units currently exist. Each unit has the responsibility for a major system along with smaller but related systems. The workload of each unit is balanced so the total system's responsibility will not overwhelm the unit leader. The responsibility for a system remains within the unit, thereby making it easier to develop long-term system maintenance capability. That is, the ability to provide continual on-the-job experience and training for new employees and thereby assuring a distribution of system knowledge. The ability to shift personnel from one unit to another provides maximum capability of staffing a priority project without hindering the maintenance support of established systems. Also, this enhances employee career growth.

Available systems analysts have been assigned as provisional unit leaders. They are responsible for the development and maintenance of the systems assigned to each unit. They also provide the basic supervision and work assignments for members of their unit.

The personnel in the system development units are responsible to the user for interpretation of any processing performed by the data processing system. Technical support is provided to those users actively involved in programming of the computer. This activity is primarily limited to MARK IV, COBOL and FORTRAN.

. Computer Processing Unit

This unit has the following areas of responsibility for all Department of Revenue data processing systems except the Montana Withholding Tax System. Services provided are:

- Operational user interface
- Maintaining current JCL and documentation
- Performing job scheduling
- Performing job setup
- Initiating computer processing
- Verifying successful job execution
- Preparing output for use
- Distributing output to user
- Maintaining records of completed jobs
- Providing library control

Computer services are generally obtained by this unit via an IBM 2922 RJE station, however, some processing requests are delivered by hand to the Computer Services Division for processing. The RJE station is basically a card reader, console and line printer.

This unit also receives, prepares and distributes printouts routed to the RJE station by personnel in the system development units.

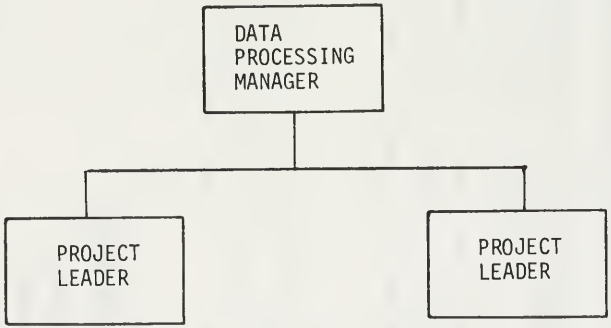
. Data Entry Unit

This unit is responsible for:

. Performing data conversion

Any excess workload this unit cannot handle is sent to the Department of Administration or is contracted out to private service bureaus. Basically all data entry work is performed on IBM 3741/3742 key to diskette machines. Several IBM 129 card punchs are retained but are used very minimally by data entry.

ORGANIZATIONAL CHART
INFORMATION PROCESSING
OFFICE OF PUBLIC INSTRUCTION



OFFICE OF PUBLIC INSTRUCTION

. CURRENT LEVEL OF SERVICES

. Goals and Objectives

The Division of Data Processing is a division of the Department of Financial Services of the Office of Public Instruction (OPI).

The basic goal of the Division of Data Processing is to develop data gathering, processing and reporting systems to serve the management and program needs of local, state and federal education agencies. Additional identified goals are to provide access to data processing facilities and to provide service and support to OPI and Local Education Agencies (LEA's) in planning and evaluation, measurement, needs assessment, data analysis, and research.

. Development

The division of Data Processing is divided into two project areas. Each area is assigned various systems for which they are responsible. For each system the responsibilities include:

- . feasibility studies
- . system design
- . programming
- . evaluation
- . documentation
- . maintenance

Work is carried out under the direction of the project leaders who are responsible for providing the necessary supervision and work assignments for members of their project team.

The primary programming languages used are COBOL and FORTRAN.

. Operational

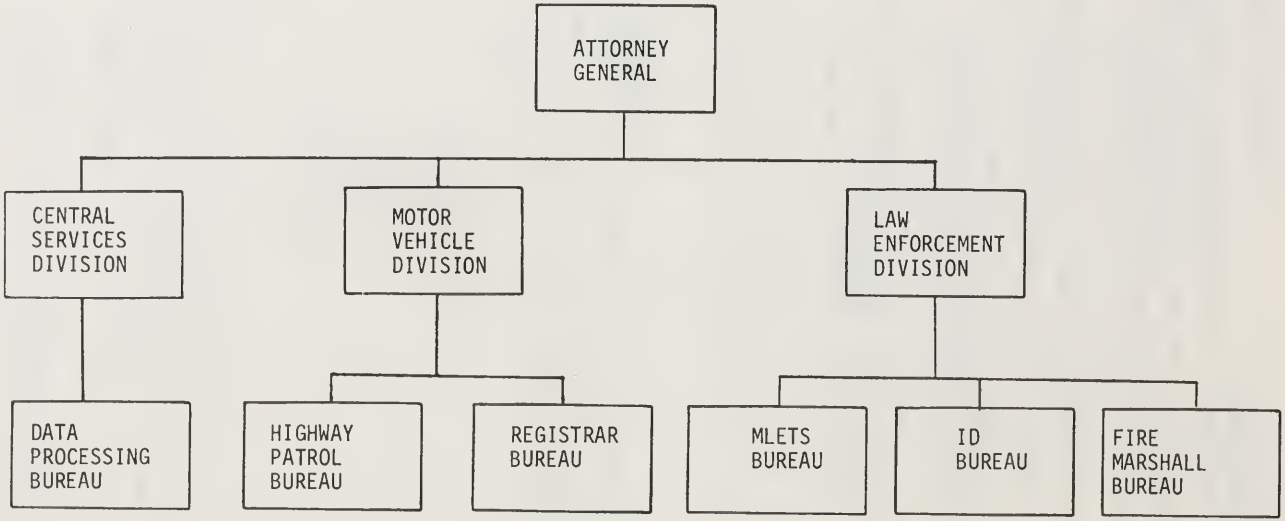
The Division of Data Processing is divided into two areas of operational responsibilities--computer operations and data entry. Each of these areas is assigned to a project leader.

Computer services are normally provided through a Honeywell H-200/2000 series computer. On occasion other computer facilities, such as the Highway Department's or University System's, have been used for processing.

The data entry section has responsibility for performing the necessary data conversion.

ORGANIZATIONAL CHART
INFORMATION PROCESSING
DEPARTMENT OF JUSTICE

2.1.9



DEPARTMENT OF JUSTICE

- CURRENT LEVEL OF SERVICES
  - Development

    This bureau is the responsible agent for Data Processing and System Development within the Department of Justice.

  - Operational

    Department of Justice currently uses CRJE, RJE, and CICS in its applications.

  - Other Services

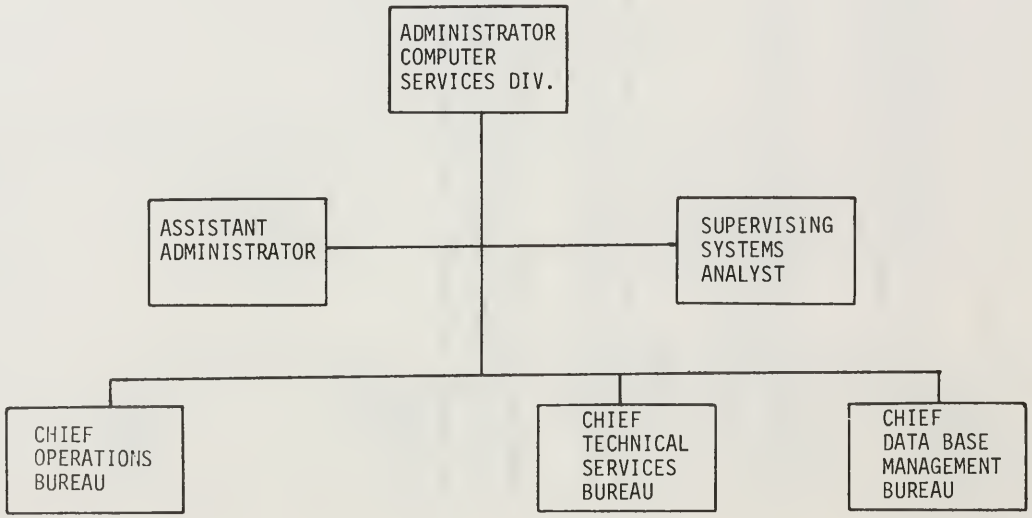
    System controls and processing schedules are determined by the various users with this Bureau's assistance.

  - Organizational changes to support planned future growth

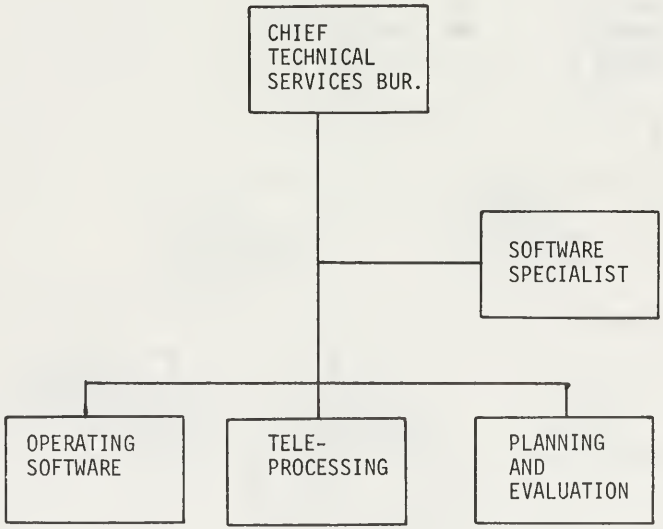
    Additional support analysts may be added to serve law enforcement applications contingent upon legislative approval.

ORGANIZATIONAL CHART
INFORMATION PROCESSING
DEPARTMENT OF ADMINISTRATION COMPUTER SERVICES DIVISION (C.S.D.)

2.1.10



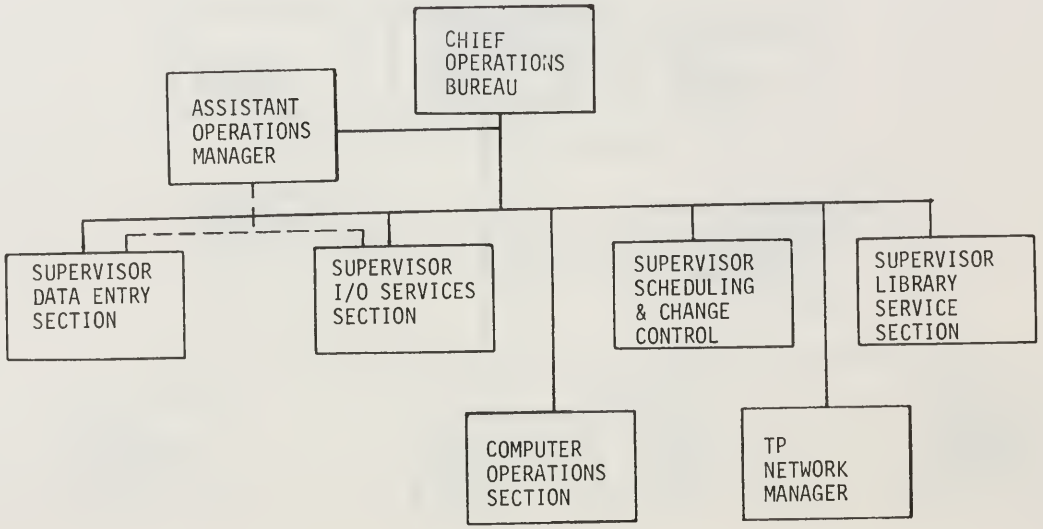
C.S.D
CENTRAL DATA CENTER
TECHNICAL SERVICES BUREAU



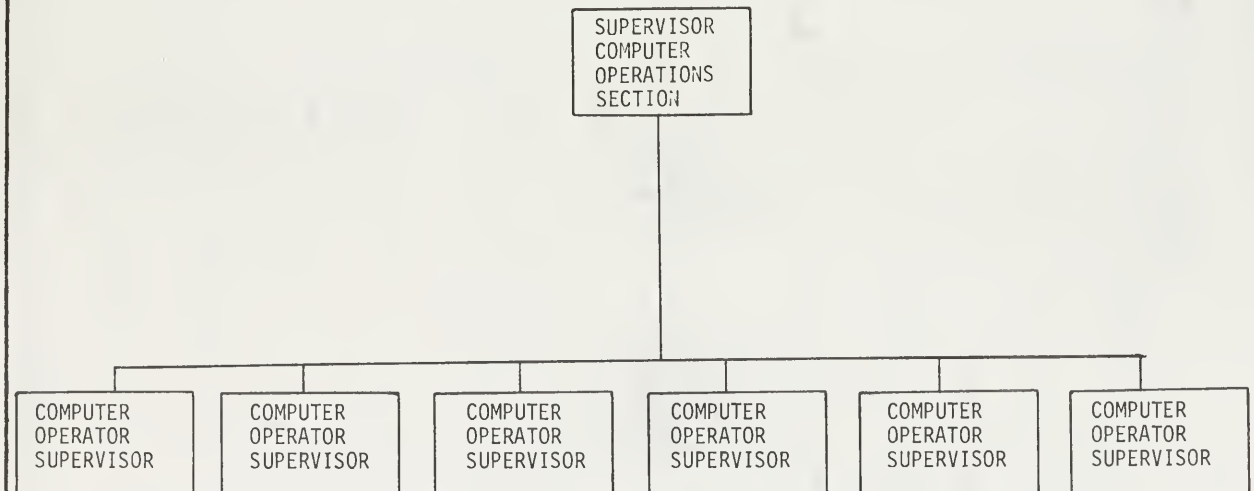
2.1.10

C.S.D.
CENTRAL DATA CENTER
OPERATIONS BUREAU

2.1.10

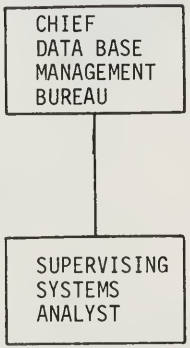


C.S.D.
CENTRAL DATA CENTER
COMPUTER OPERATIONS SECTION



C.S.D.
CENTRAL DATA CENTER
DATA BASE BUREAU

2.1.10



DEPARTMENT OF ADMINISTRATION
COMPUTER SERVICES DIVISION

. CURRENT LEVEL OF SERVICES

. Primary Function of the Division

The function of the Computer Services Division (CSD) may be summarized as follows: CSD's primary responsibility is for the operation of, and the workflow through, the central data center for the State of Montana. The operation's must be carried out in a manner designed to maximize benefits and minimize costs to all end users. Attention will be given to responsiveness, turnaround-time, accuracy of processing, security of data, integrity of data, technical guidance, and cost effectiveness of all activities related to data processing in this state government.

In order for the division to provide a complete data center service as outlined above, an organization has been established that will administratively, operationally, and procedurally, provide the mechanism for completing the job. This was accomplished by reviewing all the functions required to provide a complete data processing service. The following is an itemization of all the major functions that must be carried out in this division.

- Administration of the Division
- Capacity Planning
- Change Control
- Computer Operations - 3 shifts, 7 days a week
- Data Entry
- Standards & Procedures
- Offline Equipment Operation
- Continued Operational Analysis
- Technical Education
- Quality Control
- Queue and Partition Management

- Cost Recovery Rates
- Evaluation and Review of Hardware & Software
- Monitoring System Up Time
- Monitoring Adherence to Standards & Procedures
- Forms Supply - Management
- Job Staging (Setup)
- Limited Application Programming
- Long Range Planning
- Monitor & Evaluate System Performance
- Restart/Recovery Control
- Review Systems Design Before Implementation to Production Status
- Scheduling
- Data Security & Privacy Control
- Systems Programming
- Teleprocessing Network - Management
- User Liaison/Service
- Data Base Management

. Separation of Functions

The central data center is organized such that all activities related to getting a job through the system for the user are managed as one separate entity of the data center; operations. The technical support of the data center is the responsibility of Technical Services. All data base and data resource planning functions are the responsibility of the Data Base Administration Bureau. All other miscellaneous functions and administrative functions are the responsibility of the data center administrative staff.

The organization and the grouping of functions will be in three bureaus.

1) Technical Services
2) Operations
3) Data Base Administration

TECHNICAL SERVICES BUREAU

. Functions:
  - Evaluation and review of new hardware and software.
  - Limited application programming.
  - Monitor/evaluate system performance.
  - Provide technical consultation to all users.
  - Provide technical education.
  - Review application systems.
  - Systems programming for operating system and all related software.
  - Systems programming for communications/teleprocessing related software.

The establishment of three separate sections in Technical Services is caused by increasing complexity of the system and the subsequent need for specialization. The establishment of two separate systems programming sections is the result of an evolutionary process that has already caused us to recognize the need for a team of teleprocessing (data communication) specialists. These specialists work independent of other operating systems specialists due to the unique nature of teleprocessing. The teleprocessing group is responsible for the support of data communication services provided to almost two hundred terminals. The level of service (response time) is interrelated with the overall performance of the operating system. It is important that a second separate group of specialists maintain the operating system and concern themselves primarily with the overall system processing capability. In effect, the two specialized systems programming sections provide a natural balance that is in the best interests of the overall user community.

ware and software products will provide many benefits in the future. The gap between technical services and the users of computer services will be narrowed through the process of interaction and involvement in the development process.

OPERATIONS BUREAU

- Functions:
  - Change control
  - Data entry
  - Forms supply
  - Job distribution
  - Job setup
  - Library services
  - Off-line equipment
  - Quality control
  - Recovery control
  - Scheduling
  - Security control
  - Trouble shooting
  - User liaison

This bureau is organized to handle all operational production/job processing situations that may develop. The effectiveness of the computer as a tool for the user is dependent on the responsiveness of this bureau. It is the responsibility of the bureau to keep up with the efficiency improvements that are available in the hardware and the software. The breakdown of sections within the Operations Bureau was developed with efficiency of operation and user service as the primary goal.

The Scheduling and Change Control Section is designed to provide one central control location for changes or modifications to the software system. The combination of these two important functions into one central controlling function maximizes the stability of the system. The scheduler will treat users and Technical Services equally in terms of their demands on the computer resource.

Conflicts between in-house use of the system and user requirements will be reduced. The central change control function guarantees that the management staff of the central data center will always know the status of changes to the system whether they are routine or emergency in nature.

The Input/Output Services section functions with specific emphasis given to the user liaison. The section supervisor will in fact be the focal point for all user problem solving whether it is a large problem of far reaching consequence or a very small job involving some help with job control. The primary function of this section is to get the user's work done. The supervisor of this section may be considered the user's advocate within this organization. This section will have the responsibility for quality control, data security, recovery from system or application failures, job setup and distribution, and operation of all off-line equipment.

The Library Services Section provides tape librarian support, in addition, this section will be responsible for the management of disk files and libraries. Coordination with computer operations and other sections in Operations will be an essential function of this section.

Data Entry functions have the ability to coordinate data entry scheduling with the computer processing schedule. The significant effects of this relationship is that the data entry process will truly be an integral part of our production process. Data Entry will in fact be an influencing factor on the throughput capacity of the systems. Management of the data entry function plays an active role in the production control process.

Computer Operations functions as an independent activity, concentrating on optimum performance for the hardware/software configuration that is running continuously 24 hours a day, 7 days a week.

User interaction will be minimized due to I/O Services. Computer Operations functions independent of all other activities in the data center environment and processes as directed by the scheduler (production control) the data through the machine room as efficiently as possible.

The technical level of Computer Operations management and staff must be maintained at a high level of technical competence to effectively operate a complex dual CPU processing environment.

DATA BASE ADMINISTRATION BUREAU

The following functions outline the responsibilities of the database management and staff.

- Planning, implementation, and maintenance of the IDMS data base management system with associated data dictionary providing current descriptions and characteristics of data elements in the central computer system.
- Manage the data storage resource portion of the central computer system. This function includes the allocation of direct access storage space with the objectives of meeting the application requirements for data availability.
- Assist Production Control with the management of the tape library by providing direction and planning.
- Assist users in developing applications utilizing the data base management system, the data dictionary and report writers for one-time reporting.

- Provide data base management and general data management training for all users.
- Develop and assist in the implementation of restart and recovery procedures for data base applications, a disaster plan, general backup and archival storage of all types of data files.
- Monitor the performance of the data base management system and other data storage resources in the central computer system.
- Initiate documentation procedures and standards related to use of the data base management system and data management in general.
- Interface with hardware and software vendors (along with Technical Services) to select data management related software and hardware.

The preceeding organizational charts show the current structure of the Central Data Center.

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APPLICATIONS INVENTORY (PRIORITIZED)

The following list shows the status and priority of each information processing system for each agency. The Office of Budget and Program Planning (O.B.P.P) has prioritized production systems, systems in development, and future systems from a statewide perspective.

In the column headed "Status":

0 = Currently Operational Systems
M = Systems being modified or developed
F = Future system to be developed

In the column headed "Priority":

10 = Highest, most important
.
.
.
.
.
.
1 = Lowest, least important

Those systems with a priority of N/A are systems that are in production at the University Computer Center.

SYSTEM	STATUS	PRIORITY *
DEPARTMENT OF ADMINISTRATION		
. Statewide Budgeting and Accounting System	O	8
. Project Cost Accounting	O	5
. Telephone Accounting System	O	7
. Helena Employee Alphabetical Listing	O	5
. Billing and Statistics	O	7
. Project Control 70	O	6
. Portfolio Management System	O	8
. Mortgage Portfolio Accounting and Control System	O	8
. EEO System	O	7
. Labor Relations	O	8
. Social Security Program	O	8
. Public Employee Retirement Data	O	9
. Teachers Retirement System Membership File	O	6
. Teachers Retirement System Benefit Pay	O	8
. Collateral Investment Security Report	O	8
. Statewide Budgeting and Accounting System (SBAS)	M	9
. Property Accounting Management System	M	8
. On-Line SBAS	M	7
. Telephone Accounting System-Local Service and equipment Billing	M	8
. Project Control 70	M	6
. Short Term Investment Pool	M	8
. Personnel System	M	9
. Retirement Sub-System	M	7
. Bonded Debt	M	8
. Permit and Inspection Monitoring	M	6
. Space Utilization Study	F	5
. OCR for SBAS	F	8
. Radio/Microwave Inventory	F	5
. Disk Management System	F	8

* Reference Page 1 for status and priority codes.

SYSTEM	STATUS	PRIORITY *
. Data Security System	F	10
. D of A Billing System	F	4
. On-Line P.E.R.S.	F	6
. Text Processing	F	6
. Teachers Retirement System Calculations	F	6
. Automatic Warrant Processing	F	7
. Computerized Building Plan Review	F	4
DEPARTMENT OF AGRICULTURE		
. Grain Movement Survey	0	9
. Licensing and Registration Program	M	9
STATE AUDITOR		
. Payroll	0	9
. Warrant Writing	0	8
. Insurance Company Licensing	0	8
. Insurance Agent Licensing	0	7
. Broker Dealers	0	7
. Payroll	M	9
. On-Line Data Entry of Agent Data	F	7
DEPARTMENT OF BUSINESS REGULATION		
. Scale License and Inspection System	0	9
DEPARTMENT OF COMMUNITY AFFAIRS		
. Audit Information Management System	0	7
. Local Government Financial Data	0	7
. Alpha Computer Test Program	0	6

* Reference Page 1 for status and priority codes.

SYSTEM	STATUS	PRIORITY *
DEPARTMENT OF EDUCATION		
. Payroll - Western	0	9
. SBAS Interface - Eastern	0	9
. Budgeting - Eastern	0	8
. Local General Accounting and Financial Reporting - Eastern	0	8
. Payroll - Eastern	0	9
. Student Records - Eastern	0	8
. Physical Plant Work Order Summary - Eastern	0	N/A
. Library Periodical Reports - Eastern	0	N/A
. Budgetary Accounting - Tech	0	N/A
. Alumni - Tech	0	N/A
. Payroll - Tech	0	N/A
. Receipts - Tech	0	N/A
. Short Term Loans - Tech	0	N/A
. Deferred Payments - Tech	0	N/A
. Grades - Tech	0	N/A
. Registration - Tech	0	N/A
. Admissions - Tech	0	N/A
. Computer Time Usage - Tech	0	N/A
. Inventory - MSU Business Office	0	N/A
. Registration Billing - MSU Business Office	0	N/A
. Accounting - MSU Business Office	0	N/A
. Payroll - MSU Business Office	0	N/A
. Financial Aid - MSU Business Office	0	N/A
. Personnel Records - MSU Business Office	0	N/A
. Institutional Research - MSU Registration and Admin.	0	N/A
. On-Line Registration, Course, and Section Input - MSU	0	N/A
. Admissions - MSU Registrar	0	N/A
. Reports - MSU Registrar	0	N/A

* Reference Page 1 for status and priority codes.

SYSTEM	STATUS	PRIORITY *
. Graduating Students - MSU Registrar	O	N/A
. Grades - MSU Registrar	O	N/A
. Student Registration - MSU Registrar	O	N/A
. Drop/Add - MSU Registrar	O	N/A
. File Maintenance - MSU Registrar	O	N/A
. On-Line Master Class - MSU Registrar	O	N/A
. On-Line Student Data Bank - MSU Registrar	O	N/A
. Hand Mine and Equipment Mailing List - Western	M	N/A
. Various Administrative Systems - Eastern	M	N/A
. SBAS Interface - MSU	M	N/A
. On-Line Transcript Conversion	M	N/A
. Library Circulation - Eastern	F	N/A
. Capital Equipment - Eastern	F	N/A
. Alumni System - Eastern	F	N/A
. Room Assignment	F	N/A
DEPARTMENT OF FISH AND GAME		
. Budgeting and Accounting System	O	8
. License and Drawing	O	9
. Fisheries Services	O	7
. Creel Census Analysis	O	N/A
. Angler Pressure Survey	O	6
. Hunter Safety Program	O	7
. Violators Reporting System	O	6
. Hunter Harvest Survey	O	6
. Hunter and Trapper Use	O	6
. Game Research	O	N/A
. Recreation Supply and Demand Data	O	N/A
. Conservation Licensing System	M	8
. Budget Program	M	7

* Reference page 1 for status and priority codes.

SYSTEM	STATUS	PRIORITY *
. Interagency Fishery Data Bank	M	6
. Analysis of Hydroacoustical Data	M	5
. Arrest Record System	M	6
. Supply Inventory - Consolidation	M	5
. Game Damage System	F	6
OFFICE OF BUDGET AND PROGRAM PLANNING		
. Revenue Estimating System	O	N/A
. Legislative Appropriation System	O	N/A
. Monthly Reports System	O	N/A
. Inventory Control System	O	N/A
. Fiscal Notes System	O	N/A
. Legislative Appropriation System	O	N/A
. Position Control System	O	8
. Manpower Planning	O	7
. Executive Budget System	O	8
. Revenue Estimates	O	8
. Revenue Monitoring System	O	N/A
. Position Control System	M	7
. Expenditure Monitoring System	F	6
. Cash Flow Analysis	F	6
DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCE		
. National Center for Health Statistics Contract Requirements		
. Annual Report and Reference Table	O	7
. Major Indexes	O	7
. Table Producing Language	O	7
. Special Indexes and Listings	O	7
. Inventory Control	O	6
. Women, Infants and Children Supplemental Feeding Program		

* Reference page 1 for status and priority codes.

SYSTEM	STATUS	PRIORITY *
. Cash Support Expenditures	O	8
. Contract Services	O	7
. Mixed Air Quality Data	O	8
. Water Quality Data	O	8
. Health Services	O	6
. Emergency Medical Service Evaluation System	O	6
. Health Data Management System	O	7
. Processing Sanitation Licenses	O	8
. Health Education Media Library	M	5
. Air Quality Data Handling	M	5
. Model States Inventory System	M	8
. Uniform Child Health Report	M	8
. Uniform Maternity/Infant Report	M	8
. Emergency Medical Technician Training Records	M	7
. Patient Origin Study	M	4
. Birth Indexes	F	5
. Air Quality Data Analysis	F	6
. Water Quality Data Analysis	F	8
. Central Registry of Handicapped Children	F	10
. Automate Ambulance Inspections	F	8
. Sanitarians Daily Work System	F	8
. Public Health Information System	F	7
DEPARTMENT OF HIGHWAYS		
. Motor Pool	O	6
. Highway Equipment	O	6
. Stores	O	7
. Inventory	O	6
. Federal Aid Expenditures	O	6
. Cost Accounting Report System	O	7
. Cost Accounting Record Entry System	O	7
. Concurrent Audit	O	7
. Billing Voucher Interim	O	9

* Reference page 1 for status and priority codes.

2.2

	SYSTEM	STATUS	PRIORITY *
.	Equal Employment Opportunity	0	6
.	Personnel	0	6
.	GVW Quarterly Registration Cab Card	0	5
.	GVW County Registration	0	4
.	GVW Permit Inventory	0	8
.	GVW Proration System	0	8
.	GVW Summons Inventory	0	4
.	Highway Design	0	7
.	Hydraulics Design and Analysis	0	6
.	Construction Earthwork	0	7
.	Construction Contractor Estimates	0	9
.	Public Hearings	0	7
.	Open Range Inventory	0	6
.	Horizontal Alignment and Offset	0	7
.	Coordinate Geometry	0	7
.	Bridge Design and Analysis	0	6
.	Bridge Rating	0	6
.	Accidents	0	6
.	Traffic	0	6
.	Roadlog	0	6
.	Contract Cost Analysis	0	7
.	Skid Inventory	0	5
.	Sufficiency	0	7
.	Sign Inventory	0	5
.	Construction Equipment Rental Rates	0	8
.	Traffic Network Flow Simulation	0	6
.	Semi Analytical Bridging	0	6
.	Interstate Cost Estimate	0	8
.	Advertising	0	6
.	Right of Way Acquisitions	0	6
.	Outdoor Advertising	0	6

* Reference page 1 for status and priority codes.

SYSTEM	STATUS	PRIORITY *
. Cost Accounting General Ledger System	O	7
. Personnel Authorization and Change System	O	6
. GVW Quarterly Registration Terminal System	O	6
. GVW Proration Terminal System	O	6
. Comparison Plot	O	6
. Highway Perspective Views	O	6
. Urban Route Selection for Accidents	O	5
. Construction Topsoil	O	7
. Data Processing Cost Recovery System	O	7
. Stores Inventory Terminal Display	M	7
. Cost Accounting Terminal System	M	7
. Concurrent Audit Terminal System	M	6
. Grade Calculations	M	7
. Personnel Job Posting/Position Requisition System	M	6
. GVW Permit Inventory on-line system	M	7
. GVW Cash Flow System	M	7
. Project Scheduling	F	6
. Maintenance Cost System	F	6
. Traffic Counter Data Analysis	F	4
. Automated State Mileage Table	F	4
. Gravel and Surfacing Information System	F	6
. Asphalts Data System	F	4
. Motor Pool Billing System	F	6
. GVW Proration Fee Scheduling System	F	8
. Automated Text Management System	F	6
. International Registration Information System	F	7
DEPARTMENT OF INSTITUTIONS		
. Aftercare Movement	O	8
. Supply Inventory Monitoring System	O	6

* Reference page 1 for status and priority codes.

SYSTEM	STATUS	PRIORITY *
. Patients Accounts	O	6
. CODAP Statistical System	O	5
. Automated Billing and Accounts Receivable	O	7
. Resident Information System	O	7
. Offender Based State Correctional Information System	M	7
. Food Management System	F	7
. Personnel System	F	5
. Fixed Asset System	F	4
DEPARTMENT OF JUSTICE		
. Motor Vehicle Registration System	O	8
. Mailing Labels	O	5
. Offenses Known to Police	O	5
. Arrest Register	O	5
. Grant Management Information System	O	6
. Juvenile Probation Information System	O	8
. Montana Fire Incident Reporting System	O	7
. Drivers Licensing System	O	8
. Police Traffic Service	O	7
. Accident Subsystem	O	6
. Law Enforcement Telecommunications System	O	9
. Stolen Vehicles/Property	M	7
. Cashier System	M	7
. Inventory Control	M	7
. Dealer Information Control	M	6
. Automated Letter Generation	M	6
. Arrest Register System	F	4
. Want Warrant Component	F	6
. Upgrade LETS Equipment	F	4
. Offender Identification Subsystem	F	4
. Criminal History	F	4

* Reference page 1 for status and priority codes.

SYSTEM	STATUS	PRIORITY *
DEPARTMENT OF LABOR AND INDUSTRY		
. Benefit Check Writing System	O	9
. Cost Accounting	O	7
. Employer Tax Accounting	O	8
. Benefit Crossmatch System	O	8
. Federal 202 Reporting System	O	7
. Continuous Wage and Benefit History Study	O	7
. Certification of Credits	O	7
. Experience Rating System	O	7
. Employment Security Automated Reporting System	O	7
. Manpower Client Statistical System	O	7
. Workers' Comp. Accident/Insurance Coverage	O	9
. File Inquiry	O	8
. Payroll Reporting	O	8
. Process Financial Data	O	7
. Silicosis Benefit	O	8
. Management Information	O	7
. UISDC Tax System	M	7
. Determinations	M	8
. Applicant Data System/Job Bank	M	7
. Job Service Matching System	M	8
. State and National Apprenticeship System	M	7
. File Inquiry (ALFA Index)	M	7
. State Occupational Information Coordination Committee	M	8
. CETA Inventory System	M	7
. On-Line Job Service Matching System	F	6
. On-Line Monetary/Benefits	F	8
. Manpower Data Base	F	8
. General Ledger Interface	F	6
. Storage and Information Retrival System	F	5

* Reference page 1 for status and priority codes.

2.2

SYSTEM	STATUS	PRIORITY *
DEPARTMENT OF STATE LANDS		
. Mailing Lists	O	6
. Agriculture and Grazing Leases	O	8
LEGISLATURE		
. Computer File Analyzer	O	6
. ALTER	O	8
. Vote System	M	7
. Internal Section Number Reference	M	8
LIEUTENANT GOVERNOR		
. State Building Energy Consumption Monitoring System	M	7
. Motor Pool Energy Modeling	F	4
DEPARTMENT OF LIVESTOCK		
. Diagnostic Laboratory Statistical Information	O	6
. Disease System	F	6
DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION		
. Renewable Alternate Energy Accounting and Information Systems	M	9
. Library System	O	6
. Personnel Cost Accounting	O	5
. Cellular Composite Mapping	O	6
. B. N. Wildlife	O	7
. Electric Transmission Line Load Flow	O	8
. Fire Assessment Program	O	7
. HIPLEX Processing	O	N/A

* Reference page 1 for status and priority codes.

SYSTEM	STATUS	PRIORITY *
. Water Rights Bureau	M	9
. Dam Safety	O	9
. Agriculture Economics Analysis	O	N/A
. Agriculture Statistics Data Storage	O	7
. Flood Plain Management	O	N/A
. Groundwater Modeling	O	N/A
. Hydrology Engineering Programs	O	N/A
. Licensing Information System	O	7
. HIPLEX Data Analysis	M	6
. Landsat Digital Analysis	M	6
. AGNET	M	7
. Billing and Accounting for Water Resource Projects	F	6
. Fire Reports Data Bank	F	5
. Inventory Control	F	5
. Oil and Gas Production System	F	10
. Farm/Ranch Loans/Grants System	F	9
. Water Project System	F	5
. Computerized Mapping	F	7
. Water Quality Models	F	5
DEPARTMENT OF PROFESSIONAL AND OCCUPATIONAL LICENSING		
. Licensing Information System	O	8
SUPERINTENDENT OF PUBLIC INSTRUCTION		
. Data Analysis	O	6
. County of San Mateo On-Line Service	O	N/A
. Storage and Searching of ERIC Files	O	6
. Public, Pupil and Personnel Data	O	7
. Cost Increase Projection	O	8
. Federal Payment to Schools	O	6

* Reference page 1 for status and priority codes.

SYSTEM	STATUS	PRIORITY *
. State Equalization and Distribution	O	9
. Audio-visual Library Billing	O	6
. Professional Personnel Data	O	7
. Budget Worksheet	O	7
. State Deficiency and Permissible Levy	O	8
. Student Scheduling	O	8
. Teacher Education	O	6
. Teacher Certification	O	7
. Fiscal Processing	O	8
. Computation of ESEA Title IV-B	O	8
. ESEA Title I Application Processing	O	8
. ESEA Title IV-B Application Processing	O	8
. ESEA Title IV-C Application Processing	O	8
. State Audio-visual	O	8
. Johnson - O'Malley Application Processing	O	8
. Data Analysis	M	N/A
. Personnel and Budget Data Base	M	8
. Monthly School Foods Claims Audit	M	9
. Vocational Student Follow-Up	M	6
. Postsecondary Vo-Tech Budgeting and Accounting	M	7
. Equipment Inventory	M	7
. Student Accounting, Placement and Follow-Up	M	6
. National Evaluations System	M	6
. Process Carry-Over Funds	M	8
. Audio-visual Library Film Labels	M	5
. Data Directory System	F	5
. Computerized Cataloging of Resources	F	5
. School Food Inventory	F	8
. Statistical Analysis	F	6
. School Bus Routing	F	5
. Accounting System for Small School Districts	F	7
. EEO-5 and OLR Civil Rights Survey	F	5
. Teacher Verification System	F	7
. Basic Skills Analysis	F	6

* Reference page 1 for status and priority codes.

SYSTEM	STATUS	PRIORITY *
. Film Library System	F	5
DEPARTMENT OF REVENUE		
. Revenue Distribution	0	8
. Accounts Receivable	0	8
. Child Support Accounting System	0	8
. Return Information Submittal and Retreival	0	7
. Library Maintenance	0	6
. Job Accounting and Billing	0	6
. Keypunch Statistics	0	5
. Income Tax Return Processing	0	10
. Statistical Processing	0	6
. Delinquent Taxpayers	0	9
. Special Audit Selection	0	7
. Taxpayer Index	0	8
. Annual Mailing Labels	0	6
. Withholding Tax Processing	0	9
. Federal/Montana Income Tax Match	0	8
. Partnership Return Mailing List	0	7
. Mailing of Estimated Tax Forms	0	7
. Vendor Over and Short Report	0	7
. Liquor Inventory, Distribution, and Sales Reporting System	0	8
. Beer and Liquor Licensing System	0	9
. Liquor Retail Pricing System	0	8
. Warehouse Location Code File	0	7
. Quarterly Tax Distribution	0	8
. Camper Applications	0	7
. Store Licenses	0	8
. Cigarette Licenses	0	8

* Reference page 1 for status and priority codes.

SYSTEM	STATUS	PRIORITY *
. Public Contractors Licenses	O	8
. Oil Producers Severence Tax	O	9
. Natural Gas Serverence Tax	O	9
. Central Bond File	O	8
. Fuel Permit Processing	O	9
. Gasoline Drawbacks	O	8
. Operations Address File	O	6
. Central Bond File	O	8
. Property Assessment System	O	9
. W-2 Magnetic Tape Processing	M	9
. Inheritance Tax System	M	8
. Welfare Fraud System	M	8
. Outstanding Purchase Order and Daily Shipping	M	6
. Child Support Collection and Distribution System	F	10
. Point of Sale Polling System	F	8
. Process Information Returns	F	8
. Install Computer Terminals	F	7
. Criminal Information System	F	4
. Comprehensive Liquor Data Base	F	6
. Contractors Gross Receipts	F	6
. Commercial Property Module - Mass Appraisal	F	8
DEPARTMENT OF SOCIAL AND REHABILITATION SERVICES		
. Montana Income Maintenance System	O	9
. Montana Service System	O	9
. Rehab. Services, Encumbrances and Expenditures	O	8
. Enumeration System	O	4
. Personnel System	O	6
. Beneficiary Exchange System	O	7
. Print Address Labels	O	3

* Reference page 1 for status and priority codes.

SYSTEM	STATUS	PRIORITY *
. Social Security Data Exchange	O	4
. Social Security Buy-In	O	6
. Contract Status Reporting	O	4
. Contingency Revolving Fund	O	6
. Vocational Rehabilitation Maintenance Payments	O	7
. Day Care	O	7
. Foster Care	O	8
. Dikewood Eligibility and Claims Processing	O	8
. Montana Income Maintenance System	M	8
. R300, Encumbrances and Expenditures	M	8
. On-Line Medical Claims Processing	F	8
SUPREME COURT		
. District Court Case Disposition Reporting	M	7
. Supreme Court Administration	F	6

* Reference page 1 for status and priority codes.

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FUTURE SYSTEMS REQUIREMENTS

Applications known to be under development or to be implemented within the next five years, indicate that the current rate of increased utilization will continue into the future. An analysis of the systems to be implemented indicate that a small percentage of the systems could have a higher impact on the central data center. Most new system resource requirements will be considered to be part of our average growth. The central data center must be prepared to offer sufficient service to potentially accommodate any future system.

Analysis of future anticipated systems present one very important fact: future systems development in state government will require expanded services in almost all areas of data processing. The following summarizes functions that will require expanded services:

Teleprocessing - it is quite obvious from information supplied (by the agencies for the long range plan) that teleprocessing is the largest potential growth area. At a minimum, 18 new system developments or major modifications are going to require additional terminals around the state. Communication lines will be required in all areas of Montana which includes county seats and major cities and towns. Communications lines will be shared which will produce a large cost avoidance for state government as a whole.

Systems to be developed or upgraded which will require teleprocessing resources are as follows:

- Revenue Distribution - Department of Revenue
- Personnel System - Department of Administration
- Point-of-Sale Polling System - Department of Revenue
- Payroll System - State Auditor
- Mass Appraisal - Department of Revenue
- Medical Claims Processing System - Department of Social & Rehabilitation Services
- Insurance Company Data - State Auditor
- Income Tax - Department of Revenue

- Public Employees Retirement System - Department of Administration
- Inventory System - Department of Highways
- Want/Warrant Component LETS - Department of Justice
- Upgrade LETS Equipment - Department of Justice
- Job Service Matching System - Department of Labor and Industry
- Accounting Functions - Department of Labor and Industry
- Liquor System - Department of Revenue
- Motor Fuels - Department of Revenue
- Court Administration System - Supreme Court

Data Entry - One continual problem in data processing is that of data entry. This labor-intensive function is extremely important for the proper operation of a system. It is impossible to operate smoothly without timely, accurate data. This problem has hindered some of the major systems and as a result there is a desire to upgrade the data entry function.

Several systems are considering the possibility of Optical Character Recognition (OCR) equipment. This equipment eliminates the need for keying in the data entry function. The machine can "READ" the data directly from the source document. There are certain limitations, but the potential benefits are proven. Without keying, data entry errors are practically eliminated and the conversion can be done at a much faster rate. Without the large amounts of labor required, it can be also cost beneficial.

Other data entry problems includes the conversion of a large data file into a computer data base. Since OCR is not capable of doing this particular conversion, there will be some manual effort required.

The systems to be developed or modified that may require extensive data entry resources include:

- Mass appraisal - Department of Revenue
- Medical Claims Processing - Department of Social & Rehab. Services
- Statewide Budgeting & Accounting System - Department of Administration
- Liquor System - Department of Revenue
- Birth Index Data Base - Department of Health

- Payroll System - State Auditor
- Property Accounting Management System - Department of Administration

Data Base - The State of Montana has installed the IDMS data base system. At this point in time, no major applications are utilizing data base and the extent in which future systems are going to utilize data base are unclear. It is anticipated that once the benefits of data base are realized for some of the initial systems, a large emphasis will be made to convert those systems to data base. The following users have expressed an interest in systems currently running to data base:

- Automated X-REF Name Index System - Department of Justice
- Manpower Data Base - Department of Labor
- Medical Claims Processing System - Department of Social & Rehabilitation Services
- Liquor Data Base - Department of Revenue
- Court Administration System - Supreme Court
- Payroll System - State Auditor
- Personnel System - Department of Administration
- Highways - Inventory
- Water Rights System and Grants for Renewable Alternatives
- Welfare Fraud System - Department of Revenue

Miscellaneous - Various other users requested a need for certain resources which have already been acquired for the 80-81 biennium.

The State of Montana has recently acquired a text processing system. This on-line system is designed to assist the users with large word/text processing problems. Several users have requested a capability for interfacing their remote terminals, e.g. IBM system 6, and communicating Mag Card Typewriters with this system. Some of the output would potentially require some phototype setting capabilities.

Another requested service is for on-line graphic display. The display of data in three-dimensional form will assist the users to better comprehend statistical data. On-line Graphic Display would greatly reduce the expensive manual effort required to produce graphs and charts.

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TRENDS AND FUTURE DEPENDENCIES

The use of computers in Montana has gone through stages similar to those that the entire data processing industry has gone through. Analyzing those stages, we develop a better understanding of how we got where we are today with automated systems and can speculate where we might be going.

Computers were initially used to automate manual processes that were performed on calculators and adding machines. In essence, the computer was a sophisticated adding machine capable of tabulating and performing simple mathematical calculations faster than it could have been done manually.

Technical advances in computer design increased the speed and memory capacity. The Computer could perform tabulations and calculations beyond the scope of manual processing. In other words, the computer was not only faster, but it could also handle larger quantities of "Data". The ability to process large volumes of data was greatly increased with the addition of peripheral tape and disk storage.

The next step included using the speed and memory capacity coupled with more advanced software to do calculations with computers that could not be done by manual methods. Mathematical simulations, modeling and interactive processes of many types were performed.

Up to this point, nearly all of the computer applications were computational in nature. Advances in random access peripheral storage (disk storage) not only increased the capacity for storing and accessing large quantities of data, but also greatly reduced the cost. These two factors contributed significantly to the early stages of information processing. The computer was used in a new capacity, it was actually an automated filing system, a resevoir of information.

The next significant change to the information processing environment was the development of teleprocessing, the ability to communicate with a computer from a terminal at a remote location. The implications of this

advancement have not fully been felt today. Data base management software has been developed to make information more available to remote users, easier to manage and share with multiple users, and provide better security controls.

This brings us up to where we are today. The computer system is used for the combination of all the processes we have evolved with and depend on. There is an increasing trend towards information processing from remote work stations. About one-half of our central computer resource is dedicated to this process today.

The cost of data processing in state government has grown from about $75,000 annually in the early 1950's to an estimated $11,200,000 in fiscal 1978. This growth has been rapid and causes management to wonder if the increased cost is truely justified. The benefits of computers are many and diverse. To many managers and agency directors the most important benefit is, rapid access to information. The state computers process a volume of accounting and financial transactions that would not be possible with manual methods unless the number of accountants and clerks were increased by an estimated factor of 4 or 5 times the number on the state payroll. Large numbers of individual transactions that must be retained for rapid access could not be done effectively by manual means. A good example was the Registrar of Motor Vehicle Operation in Deer Lodge. Prior to computerization the staff could barely keep up with the paperwork required for issuing and changing titles. The requirement to keep four files indexed by registered owner, VIN (serial number), title, and license plate was not being met. Computerization was necessary to change things. Now paperwork is much more current. The requirement for accessing information by four different indexes is being met without hiring additional people.

There are increased costs associated with computerized applications such as vehicle registration. However, the charge back rate for batch processing has steadily decreased over the last ten years in Montana. A good way to illustrate the decline in the batch rate is to show the change in cost

of a given transaction that hasn't changed over a period of time. The table below shows the cost per transaction for the Statewide Budgeting and Accounting System (SBAS).

YEAR	TOTAL CPU COST	NUMBER OF TRANSACTIONS	$ PER TRANSACTION
FY'73	$172,558	1,454,579	$.119
FY'74	214,968	2,013,273	.107
FY'75	212,928	2,346,810	.091
FY'76	140,019	2,932,041	.048
FY'77	143,731	4,683,728	.031

The batch processing rate has been lowered in the past due to several influencing factors:

1. Increased volume of utilization which in effect spreads the cost among more applications.
2. Less expensive hardware with increased capability.
3. Efficiency improvements in software and operating systems allow more jobs to be processed in a given period of time.

Analysis of past figures (which have affected performance) shows growth in several areas of utilization. While the utilization figures are primarily machine oriented they represent growth with specifics.

The following charts include:

1. Total disk System Input/Output (SIO's) - this includes data for IBM 2314, 3330, 3350's. The actual block size of transferred data on each machine could vary greatly. The newer models will allow for larger blocks of data to be transferred which could result in fewer SIO's. This chart includes data for all three CPU's. The projected SIO's by fiscal 1982 could range from 60 million to 100 million with the average projected at 90 million SIO's per month.

2. Total number of batch jobs - this shows the total numbers of batch jobs submitted to the three CPU's each month. The pro-

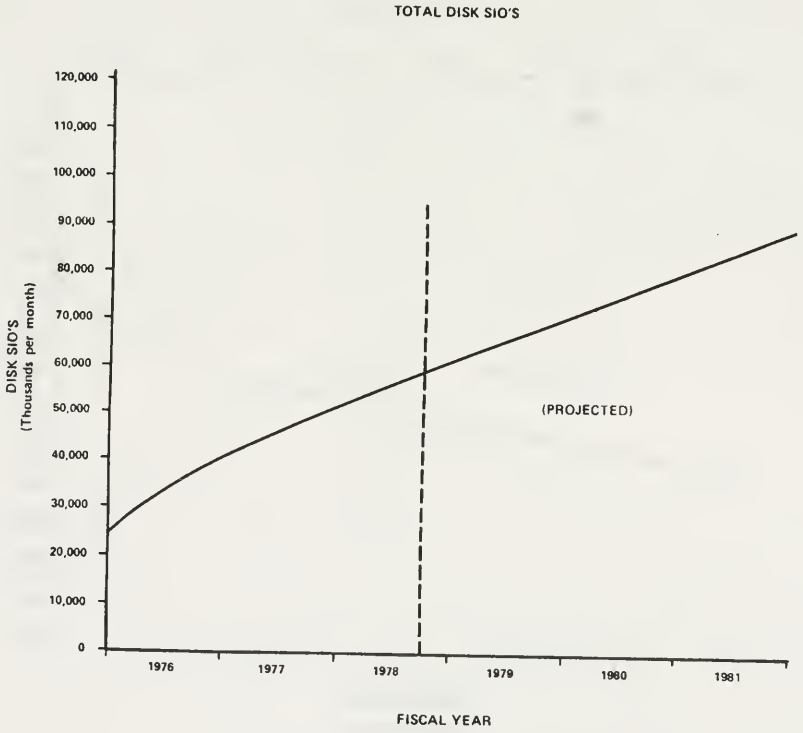
jected batch jobs processed per month by fiscal 1982 could range from 15 thousand to 19 thousand per month with the average projected at 17 thousand per month.

3. Total tape System Input/Output (SIO's) - this includes data for all three CPU's. The projected SIO's by fiscal 1982 could range from 20 million per month to 26 million with an average projected at 23 million.

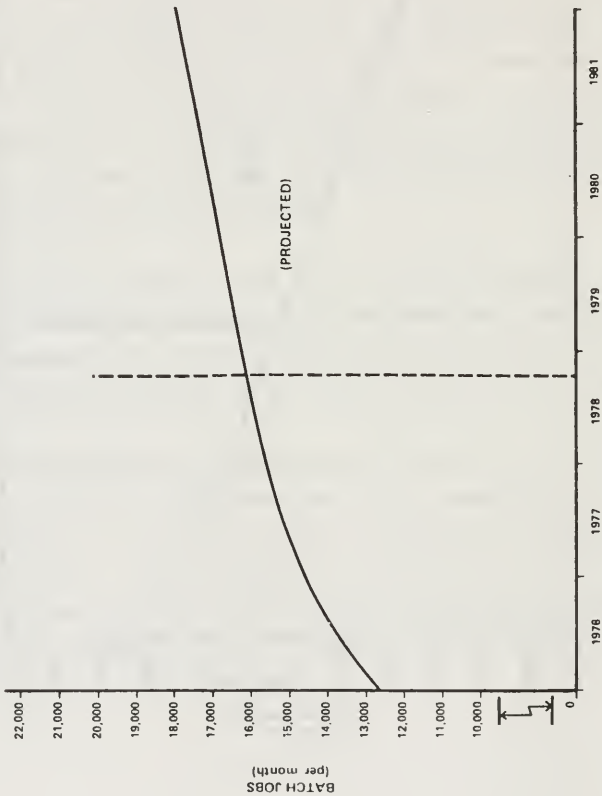
4. Total Central Processing Unit (CPU) seconds - this includes data for all three CPU's calculated to 370/158 equivalent CPU seconds. The 360/40 figures were not available until April of 1977 but their impact is not considered significant. The projected CPU seconds by fiscal 1982 could range from 1.1 million to a high of 1.4 million CPU seconds with a projected average of 1.2 million CPU seconds per month.

5. Total lines printed - this does not include data for the 360/40 until April 1977 because it was not available under DOS. The projected lines printed range from 50 to 65 million lines per month with an average of 60 million lines by fiscal 1982.

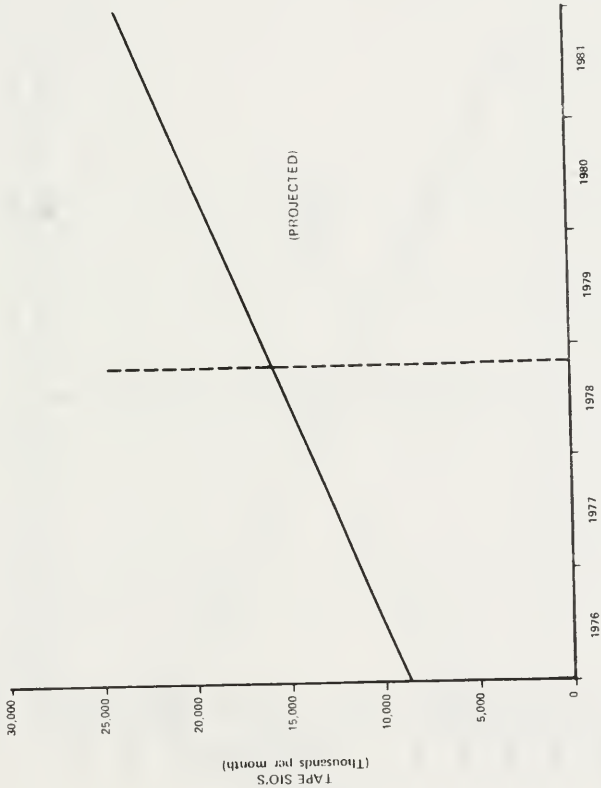
6. Total teleprocessing System Input/Output (SIO's) - only the 370/158 and 370/145 have Teleprocessing (T.P.) capabilities. The projected range for T.P. SIO's are from 6.5 million to 8.5 million SIO's by fiscal 1982. The average will be about 7 million per month T.P. SIO's tend to be cyclical because of biennial legislative sessions which increase the usage by about 1.5 million SIO's per month for about a 4 month period.


TOTAL DISK SIO'S
DISK SIO'S
(Thousands per month)
120,000
110,000
100,000
90,000
80,000
70,000
60,000
50,000
40,000
30,000
20,000
10,000
0
(PROJECTED)
1976
1977
1978
1979
1980
1981
FISCAL YEAR

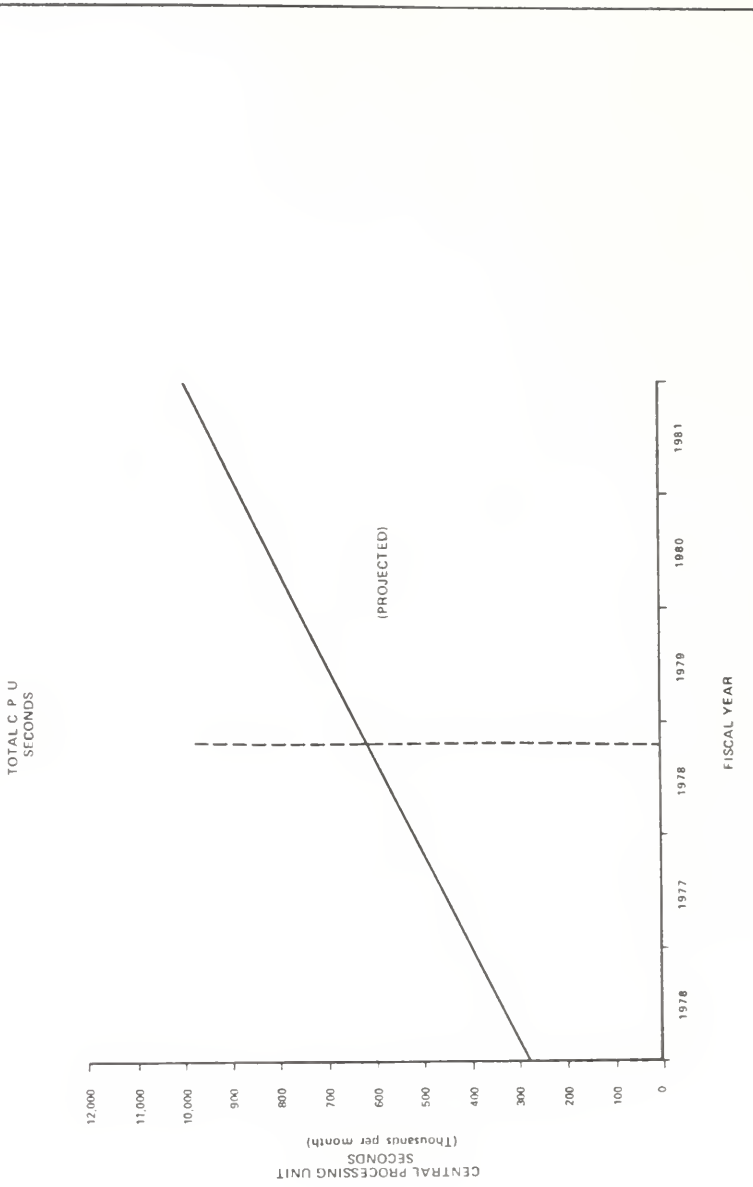
TOTAL NUMBER OF BATCH JOBS

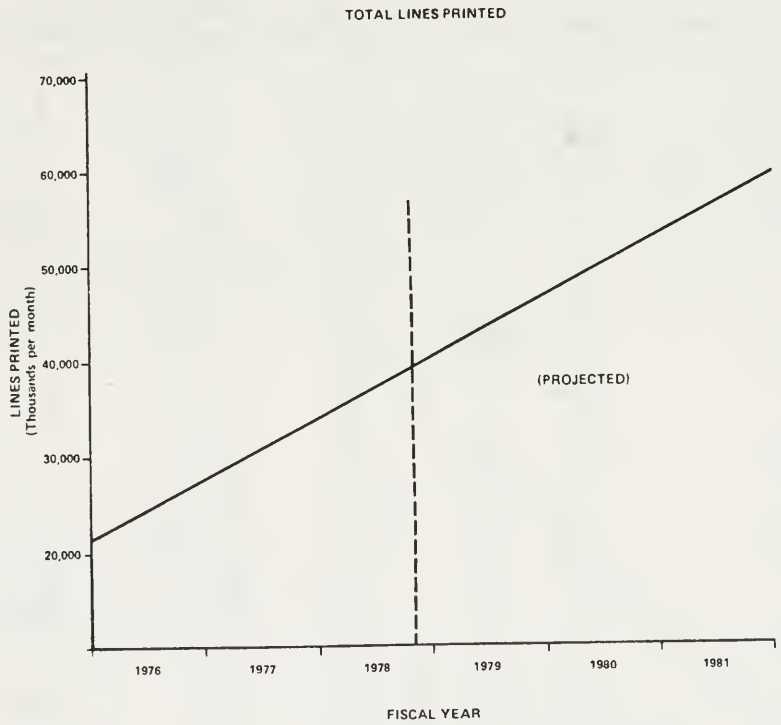


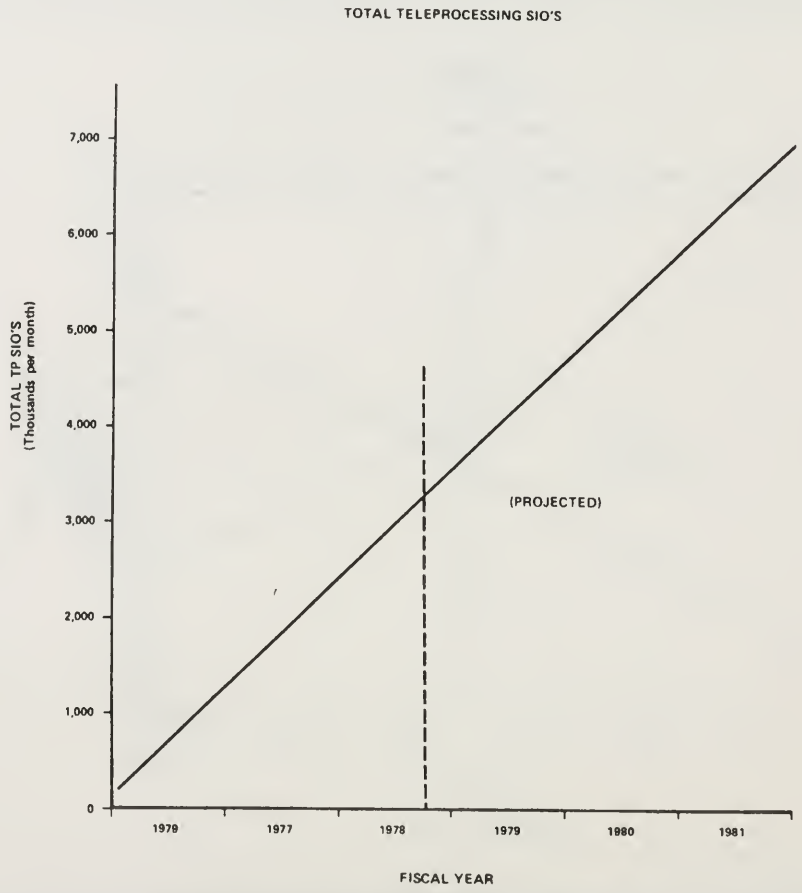
TOTAL TAPE SIO'S



TOTAL C.P.U. SECONDS




TOTAL LINES PRINTED
70,000
60,000
50,000
40,000
30,000
20,000
LINES PRINTED
(Thousands per month)
(PROJECTED)
1976
1977
1978
1979
1980
1981
FISCAL YEAR


TOTAL TELEPROCESSING SIO'S
TOTAL TP SIO'S
(Thousands per month)
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
(PROJECTED)
1976
1977
1978
1979
1980
1981
FISCAL YEAR

Based upon what we currently know about the trend of computer technology in the State of Montana, significant growth will occur in the following areas:

- Telecommunications
- Data Base
- Distributive Processing

It is expected that much of the growth will be determined by the interaction of the various information processing group managers. Their decisions will minimize problems in the areas of:

- Future Software
- Future Hardware

They will be able to effectively analyze:

- The Computer(s) as the most efficient tool when evaluated against costs.
- The projection of computer utilization and its effect on state business.
- The dangers of the utilization always growing to meet the available resource.
- The effective cost of hardware/software and people etc., over a period of time.

These of course only represent a few of the many things to be looked at and properly evaluated. The future of computers and their use will certainly be determined by the information needs of the users.

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CHAPTER III
LONG RANGE PLANNING

TABLE OF CONTENTS

3.1 DEVELOPMENT GROUPS - GOALS AND OBJECTIVES

3.2 D.O.A. CENTRAL DATA CENTER - GOALS AND OBJECTIVES

3.3 DATA CENTER DETAIL PLANNING

DEVELOPMENT GROUPS
GOALS AND OBJECTIVES

During the next biennium specific goals and objectives have been set by each information processing group within state government. The following goals and objectives summarize information processings' future growth.

Department of Administration, Information Systems Division - specific goals and objectives are:

- Provide the design, implementation and maintenance support of automated information systems for State of Montana government agencies.
- Implement a project control system which will facilitate and support statewide data processing standards.
- Maintain an active participation in the evaluation, review, selection and implementation of both hardware and software requirements.

Department of Health and Environmental Sciences: Data processing in the department is centered in the Bureau of Records and Statistics. Goals and objectives are:

- Maintain and provide information from files of vital records for people of Montana.
- Cooperate with the policies established by the DHES data processing steering committee, whose functions include planning, monitoring and coordination of data processing activities in the Department.
- Provide statistical consultation and data processing assistance to other divisions and bureaus in the department and to other users of health data.
- Develop and maintain health manpower and facility files.
- Maintain and gradually improve existing systems.
- Develop and document all new systems in accordance with guidelines and standards established by the Department of Administration's Information Systems Division.

Department of Highways - The objective of the Department of Highways Data Processing Bureau is to provide the highest possible level of data processing services for the department using the most cost effective methods available. The intent is to meet or exceed the current level of services provided and to make the fullest use of new services which will become available in the centralized environment like IDMS, CULPRIT and PC-70. In the next biennium most of the longstanding problems related to providing timely and useful management information will be resolved. These objectives will be accomplished within the current level of staffing.

- Complete the initial development of the Developmental Resource Guide by November 1, 1978.
- To increase by an additional 5% discount developmental computer time as a percentage of total developmental computer time.
- Develop by May 1, 1979, the criteria to measure project development costs and set in place and mechanism needed to collect the data to support the criteria.
- Develop a method for conducting post-installation system reviews by October 1, 1979.
- Complete post-installation system reviews for all systems by January 1, 1981.
- Convert one system to automated input technology (i.e.: OCR) by January 1, 1980.

Department of Natural Resources and Conservation - The goals and objectives of the data processing section for the next biennium is to:

- Maintain/improve the current level of services to their users.
- Automation of those systems that are currently being done manually which would prove beneficial to the department.
- Develop new capabilities necessary to assist in accomplishing departmental program/activities.
- Create within the department a data bank using the new data base management system (IDMS) and incorporating information and data from the departments several divisions and existing data processing programs.

Office of Public Instruction - The basic goal of the Division of Data Processing is to develop data gathering, processing and reporting systems to serve the management and program needs of local, state and federal educational agencies.

Department of Revenue - The Goals and Objectives are:

- By March 1, 1979, develop a statement for each operational system concerning confidentiality, security, disaster/recovery requirements of the system. Implement said requirements within 120 days after determination.
- Redesign the Liquor Information Management System and install by July 1, 1979.
- Develop a feasibility study of the Mass Appraisal System with recommendations for improvements by November 1, 1978.
- Develop a curriculum and schedule by June 1, 1979, for use in the training of employees hired at the programmer intern and programmer trainee level.
- Develop operational documentation requirements by October 1, 1978.
- Implement the "Systems Development Guide" in some form by January 1, 1979.
- Implement the "Users Manual Preparation Guide" in some form by January 1, 1979.
- Develop all new systems and major systems enhancements using the Systems Development Guide and Users Manual Preparation Guide.
- Document two systems per year using the implemented documentation methods.
- By July 1, 1980, complete a study with recommendations for the purpose of improving intra-division communications and inter-division communications.
- Develop a method for evaluating utilization of disk space and mechanics for billing to the user divisions by July 1, 1979.
- Develop improved criteria for producing keypunch statistics to accomplish more accurate evaluation of individual productivity and worth by July 1, 1979. This would include the ability to

Department of Revenue cont.

correlate actual data converted, to hours recorded in time accounting procedures in order to identify and correct operator recording errors.

- Determine what data entry system would best provide the optimum in cost effectiveness to include some method of automated data transfer from capture point to computer by January 1, 1979.
- To increase personnel efficiency to optimum by reducing to minimum the number of physical trips required to manually input jobs to the computer by inputting all jobs possible through the RJE station by November 1, 1978.
- Determine by January 1, 1979, what, if any, additional equipment or upgrades to existing equipment will be necessary to handle the extra print volume which will be generated by doing the majority of computer input/output via the RJE terminal.
- Do a study with recommendations to develop guidelines for establishment of more realistic file retention periods than currently exist by January 1, 1979. The current methods tend to produce an excess of tape files.
- Develop a feasibility study for converting existing 3767 communication terminals to CRT terminals for programmer interface with the computer system by January 1, 1979.
- Place a CRT terminal on order for use in conjunction with ATMS by October, 1978.
- Complete conversion of all operational & data entry documentation to ATMS by July 1, 1979.
- Determine feasibility of developing a daily, weekly, and monthly operational scheduling guide utilizing ATMS and the daily job log by December 1, 1978.
- Complete the initial development of the Developmental Resource Guide by November 1, 1978.
- To increase by an additional 5% discount developmental computer time as a percentage of total developmental computer time.

Department of Revenue Cont.

- Develop by May 1, 1979, the criteria to measure project development costs and set in place the mechanism needed to collect the data to support the criteria.
- Develop a method for conducting post-installation system reviews by October 1, 1979.
- Complete post-installation system reviews for all systems by January 1, 1981.
- Convert one system to automated input technology (i.e.: OCR) by January 1, 1980.

Department of Social and Rehabilitation Services - The overall goal is to have by the end of the fiscal year 1981 a totally integrated human services data base with the majority of the current systems residing on IDMS and available through a statewide T.P. network for county inquiry and update.

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DEPARTMENT OF ADMINISTRATION
CENTRAL DATA CENTER

SERVICE GOALS AND OBJECTIVES

GOAL 1

Provide an effective central computer processing service that is responsive to the needs of all users.

OBJECTIVES:

- Operate the central computer system 24-hours a day 7-days a week in a manner that guarantees 98% overall availability for all systems on an annual basis.

- Process scheduled production batch jobs in a manner that meets scheduling requirements 96% of the time, on an annual basis, for priority 8 through 10 jobs and 90% of the time for jobs with less than priority 8.

- Provide an effective on-demand processing procedure that avoids priority buildup (saturation of queues with high priority jobs) and produces a turnaround time for the user that is consistent with the priority requested.

- Process on-line CICS transactions in a manner that guarantees less than 6-second response time 90% of the time on an annual basis. Response time will be measured and recorded by a universal transaction that simply routes a message in and out of the host computer system.

- Provide quality control procedures to insure that users get the results requested.

- Provide a scheduling and change control function to coordinate production schedules and systems availability with planned changes

and emergency fixes to the system in a way that will minimize impact on system availability to users.

- Coordinate and monitor all known problems (e.g. system, data, user, scheduling, etc.) and their subsequent solution in a way that will minimize confusion and expedite fixes necessary to get users back in operation.

- Provide one contact point at the data center to record and resolve all problems on the teleprocessing network.

- Provide one contact point at the data center to record and resolve all batch processing problems.

- Provide increased data center/user liaison to insure that users are kept informed of changes at the data center and data center personnel are aware of the ongoing needs of the users they serve.

- Provide a comprehensive data base/data resource management function designed to work with users to resolve all data related problems and effectively utilize existing resources.

- Reduce any unnecessary paperwork that adversely affects user job submission.

- Maintain an ongoing hardware/software upgrade plan designed to more effectively serve the user.

- Provide a central planning, coordinating and general managing capability for all teleprocessing systems that will effectively assist users in developing new TP applications and simultaneously optimize network resources.

- Provide enhanced program editing and testing through improved software to replace the current CRJE system with emphasis on flexibility and fast response time.

- Provide for multiple applications to be available at a given terminal on the network.

- Simplify the batch transfer process (3760 to host) to ensure that processing schedules are not affected by delays caused by batch transfer limitations.

- Improve the availability of tape volumes from the tape library for all users. Eliminate tape prep phone calls for remote users.

- Increased utilization and interaction of technical services personnel in the system design process.

- Provide expanded off-line services such as plotting and optical character recognition (OCR).

- Continue to provide a central data entry function available to all users of the central data center.

GOAL 2

Minimize the cost of computer processing services for all users without decreasing the required level of service.

OBJECTIVES:

- Maintain a fair and equitable cost recovery system with competitive rates.

- Balance cost recovery considerations with user incentive considerations to insure that users do not design systems solely for the use of the cheapest resources.

- Encourage the implementation of new applications when justified, in order to increase utilization and decrease rates.

- Continually "tune" the system to perform in a most efficient manner.

- Select and install the most economical equipment and software without degrading performance.

- Operate the data center with the minimum number of people as possible without degrading service.

- Obtain supplies necessary for data center operations at the most economical prices available.

- Manage the teleprocessing network in a manner that will minimize costs without degrading service.

- Encourage the sharing of data through the effective use of a Data Base Management System.

- Develop, distribute and maintain procedures and methodology to optimize the activities of information processing groups and the Central Data Center.

GOAL 3

Maintain a secure facility to ensure the integrity, privacy, and security of all sensitive data, programs and output reports.

OBJECTIVES:

- Maintain a physically secure data center.

- Provide logical (software) security controls for all types of data storage.

- Establish input handling and output distribution procedures that insure the privacy of sensitive data.

- Establish and provide incentives for the use of a controlled "production" environment, available to all users of the central system.

- Encourage and assist users with backup procedures for their data files.

- Implement and periodically test a disaster plan and ensure two day recovery for all production jobs of priority 8 or higher.

- Provide off-site backup and archieval storage.

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DATA CENTER DETAIL PLANNING

ADMINISTRATIVE PLANNING

The administration of the Central Data Center will be concentrating on accomplishing the three goals stated in Chapter 3.

- Provide an effective central computer processing service that is responsive to the needs of all users.

- Minimize the cost of computer processing services for all users without decreasing the required level of service.

- Maintain a secure facility to ensure the integrity, privacy, and security of all sensitive data, programs and output reports.

The user of the central data center must recognize that it will be impossible to get the best of all three goals as if each were dealt with separate from all other considerations. Instead, the user will receive the best balance of the three goals. The efforts that data center management puts into one area will many times adversely affect the other areas. A graphic example of this relationship is evident when we talk about increasing security controls. Increased security controls will cause increased costs, and to a degree limit availability. Therefore, increases in security control must be weighed against the adverse affects on availability and operational costs before the decision is made to go ahead with the security plans.

In order to effectively achieve an optimum balance between availability, cost, and security controls, the Administrator of the central data center will need to be in close touch with the overall needs of the users. All decisions must be made on the basis of maintaining a balance that is best for the State of Montana. The primary communication vehicle between individual information processing groups and the management of the Central Data Center is the Data Processing Management Group which meets regularly. This group also meets to discuss special topics on an as required basis.

Central data center administration responsibilities are split between user needs and the internal problems of running an enterprise operation which operates solely on the earnings from services performed. Rates are the yardstick for measuring the effectiveness of the enterprise. When the rates become higher than private enterprise rates for an equivalent service, then problems exist with the state enterprise operation. However, care must be taken when comparing "equivalent services". There may be hidden benefits such as professional services performed by data center staff members in the areas of technical support, data base management, standards documentation and consultation in general.

COST RECOVERY

The central data center is operated as an enterprise. Income from services rendered must equal operating costs in order for the revolving account to stay in balance. A cash balance equal to 30 to 45 days operating expenses, exclusive of equipment replacement reserves, is normally maintained from month to month to cover extreme fluctuations of income or expenses.

Rates are established and documented for several different types of services available from the data center. The charge back (cost recovery) procedure is designed to distribute the cost of operating the data center back to the user in proportion to the amount of services received by each user. The basis for all rates is documented and made available to all users, auditors, budget analysts and interested individuals each time rates are changed. Expense items subject to controversy by federal auditors, such as interest will be clearly identified for each rate established.

The trend for computer processing rates is to go down (ref. chapter 2). Traditionally processing rates have been lowered every one or two years as utilization has increased. Emphasis on consolidation of large scale computing and teleprocessing should provide additional decreases in processing rates due to economy of scale. Some of the economies gained from centralization will be offset by increased expenditures in the areas of security, data base management services, teleprocessing support, and increasing labor

costs. Based on past history and current trends, rates should continue to decrease for batch processing at the average estimated rate of 8 to 12 percent each year for the next 5-fiscal years. However, a rate reduction of this size will not be made until the revolving fund cash balance has stabilized at 30-40 days operating expense. This is not anticipated until spring of 1979.

SUPPLY PROCUREMENT

The data center will obtain supplies necessary for operations at the most economical prices available. This will be accomplished by formally evaluating necessary supplies to insure products are satisfactory and, when feasible, getting competitive bids for the merchandise we purchase. By doing so we will be able to make available those supplies to our user community at a cost savings and keep the data center's operating costs to a minimum.

PRODUCTION CONTROL

SCHEDULE AND ON-DEMAND BATCH PROCESSING

The batch workload will be treated as two separate job streams, one scheduled and the other unscheduled (on-demand). This procedure will be implemented during the summer of 1978.

All unscheduled work (on-demand jobs) will be processed much the same as the total job stream workload has been processed for the past two years. The user will pay extra for the priority requested, and the turnaround time for the job will depend on the priority assigned. On-demand processing will include testing and production jobs.

The scheduled job stream will be made up primarily of regularly occurring production jobs and to a limited extent, planned testing. The scheduled production job stream is designed to insure the user that provided inputs are in on time (based on a predetermined schedule), this processing will be completed by a predetermined deadline, without paying an unknown amount to priority necessary to get the job out on time. Scheduled testing will not

involve a results oriented commitment but rather a block of computer time and resources available for analysts and programmers.

SCHEDULED JOBS

Scheduled production may be run at any hour on any day. The rate will be base-rate plus 10% for prime time (7 a.m. through 6 p.m., Monday through Friday) and a base-rate for non-prime time. Scheduling conflicts will be resolved on the basis of the state priority assigned by the Data Processing Program Manager in the Office of Budget and Program Planning. Production schedules must be established a minimum of one week in advance of the first deadline. Reoccurring schedules may be permanently established.

Scheduled testing will be limited to non-prime time when 48 hour advance notice is given. Prime time scheduled testing will be available only when notice is given one full week or more in advance.

Discount rates will not be available for scheduled processing. Discounts will be available for unscheduled jobs submitted for processing when resources are available and turnaround is not an important factor.

ON-DEMAND PRIORITY BATCH PROCESSING

The current priority processing procedure has the advantage of giving the user the option and control to assign as high a priority as desired. However, there are two problems recognized with this procedure.

1. Buildup of priority jobs occurs from time-to-time causing very slow turnaround even when a fairly high priority was used.

2. Certain job classes become inactive due to contention for resources. When this occurs, turnaround is very poor for even the highest priority jobs in that queue.

The solutions to these problems are to reduce the competition for priority and provide a more detailed division of job classes with adequate partitions available to process all or a large percentage of input classes simultaneously. The first step in reducing the competition for priority is to

reduce the number of high priority jobs competing with each other by establishing a scheduling procedure that will handle a large percentage of a current high priority jobs. A new scheduled job stream will be established during the summer of 1978.

The remaining on-demand jobs will continue to compete with each other to a lesser degree. The buildup of priority levels should be significantly reduced. However, there will be additional contention for resources as a result of scheduled job requirements. This contention can only be reduced by increasing the resources available to handle the job stream. Efforts will be made to balance availability of computer resources (expenditures) with the turnaround time requirements for batch work.

PRODUCTION JOBS

In order to provide a controlled environment for the users, operational programs and JCL procedures, the data center will establish a production job category. Production jobs will be treated in a uniform consistent manner designed to minimize the threat of unknown changes to the code or JCL procedures.

- A production library will be maintained for all users production programs and JCL procedures.
- A complete Central Data Center Users Manual will be formally implemented to minimize the necessity of programmer/analyst intervention at run time.
- All changes to programs, JCL and operational documentation will be subject to the data center change control process.

Production jobs may be scheduled or on-demand in nature. This service is optional for all users, except that scheduled production jobs must be managed as "production" with all the controls in place. Production status is necessary if the central data center is to make a results oriented commitment to meet a specific deadline. In order to qualify for production status systems must be consistent with implementation criteria established for the benefit of users.

Users may run many operational jobs that are production in nature from their own libraries, under their own control. However, these types of jobs will be equivalent to testing jobs at the central data center.

SCHEDULING AND CHANGE CONTROL

A position has been established with the dual functions of managing changes to the system and scheduling the use of the system. In effect the Supervisor of Scheduling and Change Control is responsible for the availability of the central data center. All changes to the central hardware, software and teleprocessing system will be controlled by this position. The availability of the system to perform user functions will continually be weighed against the urgency of making a change.

The effect of this control on changes will be to schedule changes in advance at a time that will cause minimal impact on the users of the system. Therefore, the availability and reliability of the system will be improved and each user will know who to contact at the data center when conflicts occur.

Changes will be formally communicated to all affected users by the Scheduling and Change Control Section which also must record all changes and coordinate any related activities to include informing affected users of change. We are currently developing formal procedures for recording/reporting changes to the data Center's operational environment. The establishment of a formal scheduling and change control function within the Production Control Bureau improves the User/Data Center communications. The day-to-day communications that must be shared with our user community will be shared by issuing broadcast messages or class output, personal contact with production control, personnel, and communication with the scheduling and change control section. Information regarding planned hardware/software changes will be shared by publishing newsletters and holding informational meetings, etc.

INPUT/OUTPUT CONTROL

The central contact point for user/data center communications is through the supervisor of the I/O Section. This position will be responsible for handling the day-to-day user communications and coordination of the various

activities that are necessary to complete user requirements. This control will be located in the I/O section of the Production Control Bureau. All problems must be reported to the supervisor of I/O Control during the daily 8 to 5 shift and to a representative of the section on other than prime shift. All problem resolution will be coordinated by the Section Supervisor. A record of the problems will be maintained that will show System ID, problem description, date reported, person reporting problem and man number, description of fix or problem resolution, date problem closed and signed by I/O Section Supervisor. This procedure will be implemented upon completion of the division reorganization and the relocation of the Data Center.

Quality control will be handled by the I/O services section. This section will follow control procedures that insure that users get the results required. The output will be checked for the following after it has been compiled by the data center:

1. Completeness
2. Readability
3. Correct forms used
4. Balancing as required

If the reports require bursting and/or deleaving processes, the I/O Controller will again check the reports for completeness and sequencing after these processes are done and before the user receives the finished product.

GENERAL SERVICES

We will provide a facility by which the user community can more readily use the data center. After our move into the new computer facility, we will have a user work area that will have work tables, a key punch, a CRJE terminal, ATMS and CICS access; and a library of technical manuals. There will be an alternate CPU console that will provide information about the status of jobs in the production control area.

We will provide a physically secure data center that assures the users and the State of Montana that unauthorized access is properly controlled. It is our intent to make available, identification badges for all authorized

data center users and employees. Only properly identified personnel will be allowed access to the computer facility. This is important during the off hour shifts when data center activity is minimal.

The data center will establish input handling and output distribution procedures that insure the privacy of sensitive data. These procedures will include all media of data processing by the center; i.e., cards, tapes, diskette, disk, source documents, printed reports, etc.

Our intent is to control the data processed by this center by recording its activity while in our custody; i.e., recording, receiving and dispersing of data, recording data file activity through the facility provided by SMF, controlling the flow of tape reels and disk spindles, etc.

The bursting operation will be physically controlled at all times. All reports will be stored in a controlled area until delivered to the user agencies.

LIBRARY SERVICES

The library facility will be managed from the production control area and be readily available to the users. The tapes will be housed in a limited access control area and managed in a way that encourages the use of generation data sets and other facilities provided by OS and TMS. Formal procedures will be established for protecting against unauthorized use of data.

The data library will be in the limited access area where only computer operators and library personnel will have access. It is to be physically located in the most remote underground location occupied by the data center. The addition and removal of tape volumes will be strictly managed and recorded.

Improving the availability of tape volumes from the tape library for all users by eliminating tape prep phone calls for remote users is a major goal. It is our intent to move the tape drives into the same room as the tape library. In doing so, the library personnel and the computer operators

can monitor the mount messages and locate and mount tapes as required. Having the tape drives located in close proximity to the tape reels will eliminate the need to call for and prep tape reels. This will dramatically improve user job turnaround time and eliminate unnecessary job setup time. TMS (Tape Management System (software)) protects against unauthorized use and destroying of unexpired data files. We intend to do this as soon as we are able to move into the new computer facility.

The computer facility and tape library will be protected by a Halon Fire Detection and suppression system. A motion detection system will be installed that will be monitored from Capitol Security to protect against unauthorized access to the Data Center in the event that the Center is not manned.

TELEPROCESSING NETWORK MANAGEMENT

The Teleprocessing Network Manager will be the central contact point for all teleprocessing problem handling. His/her responsibilities include: the monitoring and controlling of the statewide teleprocessing network; providing technical communications assistance to management and user personnel; and assisting in the planning of the teleprocessing network.

The Teleprocessing Network Manager will use the teleprocessing "Problem Tracking and Resolving System" to record and resolve all problems on the teleprocessing network. There are three functional areas that comprise the "Teleprocessing Problem Tracking and Resolving System". The following is a description of each function.

1. Problem Recording:
   The recording function is the capture of all facts at the time a teleprocessing problem is recognized. Anyone who encounters a teleprocessing problem is responsible for documenting the problem on the appropriate Teleprocessing User Problem Report and forwarding the supporting documentation to the Teleprocessing Network Manager.

2. Teleprocessing Problem Coordination:
   The problem coordinating function role is to ensure that a teleprocessing problem is documented and is assigned a priority by the Network Manager. The Teleprocessing User Problem Report provides a log of outstanding problems and develops a history of resolved and unresolved teleprocessing problems.

3. Problem Resolution:
   The Teleprocessing Network Manager is the primary problem resolver (diagnostician) with the goal of obtaining a solution to a teleprocessing problem in the fastest way possible. Determination will be made on whether the problem can be corrected by the Network Manager, Systems Tech or hardware vendor personnel. It is the responsibility of this function to provide an expeditious resolution to the problem by coordinating all users, vendors and CSD teleprocessing activities.

The ever increasing growth of our teleprocessing network will present an additional burden on the Teleprocessing Network Manager. In order to provide the proper management it may become necessary to create and fill an additional position in the teleprocessing management area.

For teleprocessing users to be well satisfied, all problems must be dealt with effectively. The Teleprocessing Network Manager will monitor the progress of the teleprocessing network and ensure the problems are resolved in the right time frame.

DATA ENTRY

We will continue to provide a central data entry function available to all users. We will manage the workload in such a manner that the peaks and valleys can be effectively handled. By using advanced data entry equipment, we are able to capture cleaner, more accurate data as well as statistical information. These statistics will give us the tools necessary to track operator progress and effectiveness, job costs per record and stroke, equipment effectiveness, etc.

HARDWARE/SOFTWARE

GENERAL

The impact of CSD's major goals (Section 3.2) and the future trends in data processing (See Section 2.4) will play a primary role in our long range data processing plan. From a hardware/software standpoint the three major areas of concern are; 1) teleprocessing network, 2) data security and, 3) performance/service goals.

As a central data center, our prime responsibility is to maintain the highest availability and reliability of resources. We are also charged with providing an integrity mechanism for our users. These areas will be addressed with very specific plans to ensure that we are meeting our goals.

TELEPROCESSING NETWORK

Recently CSD has been charged with complete responsibility for the T/P network. This includes the entire communication link from the central CPU through the modem at the user's end.

The primary objectives are to; 1) provide access to any application system from any terminal, 2) to provide the most cost effective use of phone lines, modems, etc. (i.e. the T/P network), and 3) to provide the most reliable software system possible.

Accessing any application system from any terminal is an approach totally opposite from what is being done today (e.g. one terminal to an application), and will involve drastic changes in computer system software (VTAM-ACF Advanced Communications Function). In addition, hardware changes will also be very drastic - networking, concentrator, front-end processors, etc.

Development of the policies and procedures manual for teleprocessing will be a prime concern during the last part of 1978 and early 1979. This requirement is mandatory for CSD to provide proper control of the T/P network and for implementation of the "networking" approach.

The next major step in moving towards our ultimate objective (Number 1 above), will be the full implementation of the "COMM-PRO" 3705 performance software and the installation of a "ROTARY SWITCHED" phone system. This will provide asynchronous terminals users with full application selection. The time frame for this will be the last quarter of 1978.

The next major effort (1/79 - 7/79) will be a concentrated effort to convert our RJE and CICS users to VTAM (non SDLC). Concurrent with this will be the development of billing methodology and a system to automate the charging for service on the T/P network.

Once the majority of our T/P applications are converted to VTAM and stabilized, we will begin to plan a cautious conversion to SDLC. We expect to have this accomplished by late 1979 or early 1980. This will move the T/P network much closer to the "any terminal" philosophy. Time sharing will still present problems but these are addressed below.

Assuming responsibility for the T/P network presents several unique problems. First the level of communications expertise within CSD will need to be enhanced. During the next year (78/79), CSD will be acquiring the required education both formally and OJT. At the same time we will be developing a data processing system for monitoring the utilization of the T/P network. This will help us to make the most effective use of the entire network.

CSD's interactive T/P network (primarily CICS) will be heavily impacted by changes in IBM software. Central to the whole issue will be Release 1.4 of CICS/VS. This release will be installed in June-July of 1979 in order to retain software support from the vendor. Enhancements with this release include CPU communication, on-line interactive debug, and external security. As a prerequisite to installing Release 1.4, we will have to install IBM's program product ACF (Advanced Communication Function) software. This is required by CICS.

We expect to see the utilization of ATMS gradually grow during this fiscal year. This growth will include more users and increased use by existing users.

The biggest task undertaken by the Network Management group will be the reorganization of the teleprocessing network. This will be scheduled for the last quarter of 1979 and the first quarter of 1980. We will begin to seriously develop and maintain a long range communication system plan, combining and sharing lines will be the main concern at this time.

During the last half of 1978, CRJE will be replaced with a much more functional system. It must be understood that this will not be our long term solution to the interactive computing problems, but will provide an interim solution. By providing a much more responsive system, we intend to; 1) reduce printed output, 2) increase programmer productivity, and 3) enhance work turnaround time.

Distributed processing should increase sharply during the next five years. Hopefully when this is combined with well planned data management, we will reduce the growth rate of the Central CPU and online storage.

SECURITY

Data security and personal privacy are the watch words for the next decade of computer processing. As a service center it is our responsibility to provide data security both physical and logical (software) for our users data. Privacy of data elements is a topic which is totally the responsibility of the user agencies, although the tools will be provided by the Data Center.

During the last quarter of 1978 and the early part of 1979, CSD will be installing a completely new physical security access system. This system will utilize key cards and a password access method for entry to the computer facility. Closed circuit monitoring equipment is also being considered for the non-prime shift hours.

Logical security encompasses a considerably larger spectrum and consequently, is much harder to provide and enforce. CSD's position will be to provide a security mechanism for service programs, loadable programs, disk data sets and tape data sets. CSD will accept the responsibility for protecting those data sets (programs included) that the users choose to have protected.

During the next 6-9 months, we will be developing the procedures which will add flexibility to our users (no tape prepping) and at the same time hopefully provide a tape data set security system. This is liable to be an interim solution to the software problem. Concurrent with this, we will be studying the total software security system.

Within the next year a total security system implementation plan will be proposed. This will include all procedures and standards, and software acquisition; development in-house will provide too many people with intimate knowledge of the system.

The data center will establish a security officer in the next year. This position will be responsible for monitoring the security procedures, software systems, passwords, violations etc. It is our intention that security be controlled through one point. If too many people are involved then the system will become too thoroughly understood and too easily circumvented.

PERFORMANCE MEASUREMENT AND EVALUATION

A performance measurement strategy will be developed during the next 18 months which has six prime objectives. Performance will be measured to:

- Provide data and predictions to update the ongoing plan as utilization of resources in a given area reaches or is projected to reach saturation levels.
- Determine the response time goals for teleprocessing systems are being met, and to provide generally available reports which show actual response by transaction and transaction complexity.
- Determine that turnaround time for batch work is within the advertised service framework, again providing generally available reports which predict this.
- Provide a new service function which has as its objective the measurement of batch applications, when requested, and performance improvement evaluations and recommendations based upon this measurement.
- Enhancements to the current measurement and evaluation functions of systems, and systems components.
- Provide a sound basis for rate determination.

To these ends a detailed plan will be developed for measurement, evaluation, and recommendations. The initial objectives will concentrate on the overall system and its components. There are a number of measurement and evaluation products on the software market and several fit our anticipated requirements in this area. Measurement with either acquired products or programs written by the Technical Services Bureau will measure and predict saturation on central processing units, channels, control units, devices and data sets. The extremely critical area of the Teleprocessing Network will be measured to determine and predict or determine line, modem, concentrator and front end loads and capacities.

Much of the data needed for a comprehensive measurement and evaluation program is available today, however, the computer programs necessary to effectively translate the large amounts of raw data into an evaluatable form are not. Also many of the most critical and esoteric control software system (operating system) functions now have little or no data collected. Initial heavy concentration in this area will likely have an excellent payoff in terms of changes or enhancements designed to contribute to greater throughput of both batch and teleprocessing work. Again software products will likely be recommended to solve this problem.

After the overall system measurement and evaluation program reaches the stage of a firm commitment to direction and we have the gross system measurement function under way (46 months) a month or less will be devoted to defining and instituting the new USER service function. This program will provide organizations the ability to have monitored, applications systems and/or programs with emphasis on improved performance. Organizations desiring this service (it will likely be a subset of the Total System Measurement and Analysis package) will be able to work with the Technical Services Bureau (T.S.B.) to define the areas they wish to monitor and participate in the analysis and recommendations with T.S.B. software specialists.

As an ongoing function of total system measurement, data will be collected and maintained which will measure and analyze application performance during the selected sample times. Even though requests have not been made to measure and analyze an application, those applications which happen to be

running during sampling periods will have data analyzed and reports issued to the user agency.

Teleprocessing and batch, response and turnaround respectively, will be constantly measured. As the overall program is put in place, enhancements to the current TP monitoring will more clearly show both what the response is for various transaction categories and provide indicators of which categories need enhancements via performance tuning to continue to meet service goals. A monthly summary will be provided all user agencies which shows response for all agencies, anticipated problem areas and proposals (with impact statements) by the Technical Services Bureau for performance tuning.

Batch system job turnaround data analysis is now under way, and, as in the case of TP transactions, batch jobs will be categorized by a measure of resources used. The turnaround time for each category will be closely monitored to insure that service goals are being met and that needed resources are scheduled well in advance of new major applications systems installation.

In order to provide CSD with more accurate information on anticipated additions to the total system load (and thus assist in predicting needed capacity) impact statements will be required of USER agencies defining in broad terms, new application and/or hardware requirements. This program is already under way.

The advent of a full scale system performance measurement and evaluation function will show a number of tangible benefits. Chief among these is the ability of CSD to utilize all system resources to their fullest potential, limited only by the inherent inefficiencies in some applications systems, and the occasional deadline imposed inefficiencies which might, through scheduling, temporarily impact performance. The Data Center will be able to stretch resources further, and upgrade in a more timely fashion. The net result will be less disruption because of lack of resources.

Individual applications systems will see performance improvements. When the capability is added to measure data set activity, and begin to provide the new application system measurement and recommendation function the information needed to tune these systems will be available, thus saving minimally some wall clock time and likely CPU time and EXCPS and dollars for the USER.

The understanding of the interactions of various system components will be enhanced, and the Data Center will be better able to predict the potential impact of change (in whatever form) to either the configuration, the control software or application systems. Finally the ability to set, and guarantee service levels for teleprocessing and batch work will be greatly enhanced and the base of historical data combined with projections of load will allow the Data Center to reflect more realism in our rate structure.

COBOL CODE OPTIMIZATION

A product will be installed by the end of the first year which will reduce substantially both the memory and the CPU time required to run COBOL programs. CAPEX's COBOL Optimizer (consistently on the Data Pro Honor Roll) will reduce the memory requirements of COBOL programs by up to 30% and the CPU time by as much as 25%.

While it would seem that a tool of this kind should fall under performance improvement, it also has a number of functions which aid in programmer productivity and in reduction of printing for COBOL compiles. Specifically, programmers will be provided the enhanced dump formats which take much of the guesswork and the hexidecimal calculations out of debugging, relate items in a dump directly to the source program listing, provide the ability to continue test runs after an abend situation, show how much of a program has been tested or untested, and provides historical data on program execution (CPU, counts for each source instruction).

A tool of this kind, specifically Optimizer III is a powerful aid in getting more productivity out of the computer system. The basic code optimization function should and will likely become a state standard.

3.3

DISK SPACE MANAGEMENT

A "Disk Space Management" system will be installed by the second quarter of 1979. This system will have three major objectives. These are:

- Provide CSD administration and operations, a tool to bill for space and the ability to effectively manage the growing numbers of data sets.
- Provide the measurement and evaluation effort the summary data necessary to both tune the system and specific applications; and an assist in planning for balanced channel, control unit, and disk drive usage.
- Provide better data with which to make disk capacity increment decisions.

A system of this kind is an absolute must item, since many administrative as well as technical decisions can better reflect considered judgement rather than estimated guessing.

CSD will insure that functions are built in to whatever package is installed that provide for automatic archival of data, automatic back up of both CSD and USER specified datasets and volumes, and that the system can be maintained by non-technical personnel (e.g. operations).

COMPUTER OUTPUT MICROFORMS

While the data center itself has no plans for installation of equipment for generating computer output microforms, a cursory glance at state expenditures in this area today, indicates that within two years, COM equipment will be justified and installed on a cost basis alone.

CSD would recommend that the Management Systems Division, Records Management Bureau investigate the feasibility of this service. If a COM program is initiated, not only will costs be reduced, but state agencies will receive better service in terms of flexibility and turnaround time. Today the vendor providing this service is located in Spokane, and technical consulting when required is limited to letters and phone calls. With equipment and techni-

cians in the Capital Complex, some time and confusion can be avoided. Finally, turnaround would likely be one day, a vast improvement over the current service level.

The reduction in print volume at the data center while reducing center income would also allow the Data Center to defer costly additions of printing equipment.

GRAPHICS

The existing plotter managed by the Department of Highways will be replaced after consolidation by a new flatbed or drum plotter. The time frame will likely be the first quarter of 1979. Two reasons exist for this replacement, first the old Calcomp 110 is extremely difficult and expensive to maintain and secondly, user's are seeking enhanced plotting speed and function.

The next step is to begin to provide a time computer graphics capability. This capability has already been sought by the Department of Community Affairs, and is a likely current requirement in the Departments of Natural Resources & Conservation, and Highways. Applicability for this service can also be seen for the Departments of Fish & Game, Agriculture, Education, Health and Environmental Sciences, and in the University System. The timing and even the ability to provide this service depends upon a large number of variables.

The most limiting variable is what time sharing capability is available and installed. Our plan then at this time calls for a computer graphics capability six months after successful installation of a true time sharing system.

A computer graphics capability will in general allow a user of a graphics terminal to create maps, charts, graphs etc., at their terminal, and manipulate them until the desired product is arrived at. The user may then either have the product printed or plotted at their terminal or at the central site.

SYSTEM LIBRARY DECENTRALIZATION

During the last quarter of 1978 a plan will be finalized to decentralize both control and maintenance of user libraries. The current, centralized

library structure is a result of the Data Centers attempts to provide some measure of security for user data, programs etc. With the advent of a new security system, each user will have a choice, either to have library maintenance and control continue to reside with CSD, with open access (no additional security), or to assume the functions of control and maintenance and utilize or not utilize (user option) the new security provisions.

The plan will be implemented when a security system becomes operational. The plan will contain all the details of how the process of transferring control will be handled, and some suggested procedures for both control and maintenance.

HIGH-SPEED PRINTER

CSD's current theoretical print capability is 4,400 lines per minute. During a 24 hour day then assuming a constant print load and the devices are operating at 66% of rated speed the print capability is 4,181,000 lines per day. If weekends and holidays are ignored, the effective rate is 87,425,000 lines per month (20.91 days x 4,181,000). In the 15 month period 1/1/77 - 3/31/78 the average monthly print load was 35.4 million lines per month, and during the last three months the average was 38.6 million lines. The figures include all mainframe statistics and all operating systems. The load statistics do not indicate how many lines were printed remotely and thus are somewhat inflated.

It would seem that since only 44% of our apparent capacity is being used, that no capacity increase will be necessary in the forseeable future. The load may even remain stable if COM gear becomes available in less than two years.

Still there is a possibility of a printer upgrade. An IBM 3800 printer, for instance, can deliver (using approximately the same formulas) over 200 million lines per month, and its cost today is $2,200 per month in excess of current expenditures. While this might seem a prohibitive upgrade in terms of dollars, the picture gets clouded when we try to quantify our savings in expenditures for special forms reduced size of forms, bursting and the like.

The Data Center plans to investigate more thoroughly user agency expenditures for special forms, where a printer like the 3800 can save us money. A determination will also be made of the cost of personnel time and materials related to conversion to in-house special forms creation. Even if it is found that potential is there for breaking even, or even saving money on a faster printer, we will need firm commitments from affected agencies before a printer upgrade is committed to.

OPERATING SYSTEM CONFIGURATION

During the next year, the data processing work load will increase to the point that the Central Processing Units may become overtaxed. The Data Center is faced with a critical decision at this time; is it time to replace the 370/158? It is felt that the 303X gives us only an interim computer leading to the 380 series. The 370/158 will be paid for in 1980-81 and can be inexpensively modified. The decision has been made to install the 370/158 attached processor (AP) feature as an interim feature.

Installation of the 158/AP is going to require a change in operating systems. The data center plans to convert to MVS during the May-July 1979 time frame. This operating system will allow us to more effectively operate the hardware system and should provide enough CPU power for another year or so.

At the heart of all our planning are the two major components of our hardware/software service facility, the computers, and the control software, or operating systems. The most difficult planning decisions, which usually affect the majority of data center expenditures center around these two items.

A major goal in the hardware/software area is to make the processing service, from the user's point of view, appear to be a single apparently indestructible flexible, fast, efficient, large computer system. In this regard the current consolidation effort, which culminates this October, is the first small step in this direction. Major gains in support of this goal are in the areas of a degree of redundancy (backup) for equipment outages, and increased processing capabilities. The flexibility aspect is enhanced slightly (at a cost) by the ability to route jobs to the appropriate computer.

A number of major steps will be taken during the next three years which continue to build towards this goal. Replacement of the control software (operating system) is the first logical step, and the second will be enlarging the machine resource base and making the two computers more alike in both speed and size.

In addition, several other factors entered into the decision to enhance the control software. As the data center service facility has grown and the clientele have become both better educated and desirous of having state of the art capabilities available, the operating system has become (OS/VSI) more and more restrictive to their desires. A noteworthy example is CRJE: a twelve year old conversational remote job entry system long since outdated by many newer more powerful and flexible time sharing offerings. Because of the need to enhance our day-to-day functional capability and flexibility we plan to upgrade the operating system OS/VS1 to MVS to accommodate added function in many areas. This upgrade will likely take place during the third quarter of 1979, and as all enhancements in the computer service industry is not without its price. While MVS will enhance the ability to schedule jobs on two machines (flexibility), provide a more powerful time sharing tool, and enhance the ability to both measure and tune systems performance in real time (efficiency), it will also add a significant resource overhead to provide these and other new functions. There is no alternative, however, since VS1 will never adequately support a two CPU environment. The minimum time to plan for a smooth transition will be nine months.

Education for technical specialists will begin during the fourth quarter of 1978. The formal transition planning and user education will begin during the first quarter of 1979. The target date for initial system tests will be May 9, 1979 with implementation in late June 1979.

The consolidated hardware configuration leaves much to be desired in support of flexibility and speed. It does not address the goal of being viewed as a single system, and it has some deficiencies in the area of indestructibility (backup for catastrophe). Additional capability will likely be needed during the next biennium. Our options begin with the lowest cost,

or a 158/AP System. This brings added CPU power at the expense of reduced channel and control unit capacity for our direct access devices. This option will be exercised if; a) we show no significant increase in disk usage (ATMS, SBAS and Data Base are the probable areas of largest increase) and, b) we are able through system tuning and application performance enhancements to reduce our load. If we cannot install a 158AP, the range of options is large and our recommendations will be based upon our most current load predictions when our actual load begins to approach capacity.

The type of system selected will as closely as possible reflect our current 158 configuration, thus bringing us another step closer to making our offering resemble one large scale system. Our backup capability (in event of one CPU range outage) will be sufficient enough with this system, to not only keep our teleprocessing network functioning, with adequate response, but also our batch work, with little apparent degradation in turnaround time.

The goals of flexibility and speed will be met, and the system will from the user's point of view be just that, a system, not two computers. With the added backup capability, our chances of outages on either system seriously depleting our ability to function at near normal will be greatly reduced.

DATA BASE PLANNING

The support provided by the Data Base Administration Bureau encompasses the total system process from design through production for systems using data base management software for those systems which cannot. The Data Base Administration group will be supporting the new development identified in Chapter 2 using the following techniques:

a. Consulting with the system designer and providing analysis in the conceptual design of Data Base Structures to support their agency's data.

b. Assisting in the development of Data Dictionary input to define the characteristics of their system and the associated data elements.

c. Developing the data base Schema definition to provide the IDMS System with the overall data base structure for the Agency or Agencies. This design is arrived at by working with system designers to define the most optimum system solution.

d. Development of subschema definition to protect the privacy of data for each of the data base user systems.

e. Defining test and production system mass storage requirements for users of data base and non-data base software. This function is accomplished by the definition and development of Device Media Control Language (DMCL) routines in the data base area and by defining with the users trade-off for normal and VSAM System file allocations.

f. Development of load programs for application files to be loaded to data base for agency application use with existing files. These load programs are the "one-time" shot routines to move a system into the production IDMS environment. These load routines act as an audit tool to determine if the characteristics specified in the data dictionary are correctly defined and provide for an arbitration point among users whose data while different is "correct".

g. Develop and monitor restart and recovery procedures for data base systems and by providing for off-side storage and disaster planning technique.

h. Provide technical training and support for agency personnel in the use of the data base management software, the CULPRIT report writer; On-line Query and all other packages offered by the Cullinane Corporation. Included within this system support function is the testing and upgrading to a new release of Cullinane software packages.

STANDARDS PLANNING

Standards developed for Montana State Government Information Processing Groups will not be developed unless the requirement for the standard produces a solution to a method or performance problem. Method and performance criteria must establish a base for useable/working Guidelines which will

serve as a tool for accomplishing work assignments. The following represents those standards which will be implemented/developed during the next biennium.

1. STANDARDS PROGRAM - CHARTER AND PROCEDURES
   - The "Standards Program - Charter and Procedures controls development of standards through effective procedures.
2. CENTRAL DATA CENTER
   - Standards will be developed in the following areas:
     - System Review and Implementation
     - Change Control
     - Production Control
     - Computer Operations
     - Technical Services
     - Data Security
     - Data Base

   A portion of the above will be presented in a Central Data Center Users Manual which will assist users in interfacing effectively and easily with the Central Data Center.
3. MODIFICATION OF THE EXISTING STANDARDS MANUAL TO COMPLIMENT CURRENT/FUTURE ENVIRONMENT REQUIREMENTS.
4. SYSTEM DEVELOPMENT GUIDE
   - The "System Development Guide" is a guide for the control and development of projects requested by users of Information Processing Groups.
5. USER MANUAL PREPARATION GUIDE
   - The "User Manual Preparation Guide" standardizes the preparation of users manuals.
6. QUALITY ASSURANCE PROGRAM
   - The program through policies and procedures, insures adherance to standard practices approved by management.
7. DETAIL SUPPORTING STANDARDS
   - Detail Supporting Standards will support development groups with standards for project management, programming languages and support of development methodologies.

DATA SECURITY AND PRIVACY PLANNING

- CLASSIFICATION
  - Security - Is maintaining access constraints on data with the ability to process that data safely.
  - Privacy - Is protecting data from unauthorized or subsequent access/disclosure of data which may be detrimental to people or groups.
  - Policy - Is the establishment of management directives that enforce and control security and privacy.

Since the data maintained by the State of Montana is one of its most important assets, the privacy and security of the data are crucial operational and legal concerns in the centralized data processing environment. The magnitude of the data privacy porblem within State government information processing systems stems in part from the complexity of the data processing activity itself. The security aspects of the data environment has many elements - the computing hardware, on-line and off-line data storage facilities, communication lines, operating system software, teleprocessing software, application programs, procedures and last, but not least, personnel. Security at any one level will not ensure security at any other level within the systems. In addition, the privacy and security of the data can be effected by criminal activity, carelessness, malicious destruction, environmental failure and catastrophe. Obviously we will not in centralized data processing be able to address all of the areas presented above, but must address those which are germane to the environment we control.

In order to ensure the privacy of data, a few basic characteristics of the data must be known:

1. Where is it located?
2. Who is authorized to display, update and create it?
3. Does the data have privacy and security constraints itself or only if related to other data?

In order to insure the security of the data we first must secure the operational environment in the following manner:

1. Prevent deliberate destruction or theft of data in the central complex.
2. Allow only authorized personnel access into the system via the communication facilities and prohibit data theft via the communication network.
3. Provide for environmental safeguards to maintain the operational system.

We have now examined what must be provided, this next section delineates how we intend to address (via a plan) a solution to the above privacy and security aspect of the state data.

To determine where state data is located (files, data base, tapes, etc.) will require the definition of the data (a data description) in the data dictionary system. This defining of data characteristic will not happen automatically and cannot be accomplished for all systems but will occur as systems are rewritten and/or moved into the data base environment. Within the dictionary system, the relationship of authorized entities to the data can be cataloged. This cataloging would include the application system(s) which can use the data associated to the Governmental Units(s) that uses the system to display, update, create or delete it. The third criteria for privacy and security constraints can be documented within the dictionary but can only be administered through the data base management software through Subschema control. For file systems the responsibility for privacy/security is a function of the application program software since the program has access to all data within the record and can do with it as it will.

To address the security of the data as controlled within the central data center unauthorized personnels' access to data storage must be tightly controlled. State personnel removing data storage media from the central facility will require agency authorization and the central data center security authorization as a function for the type of data being removed. The communication network will require security encoding software or hardware depending on the security/privacy characteristics of the data being entered and transmitted through the network. Hardware may be required on the network to

detect any unauthorized tap on the communication line to provide the required protection. The communication network and associated software must identify users through a series of passwords which are changed periodically by the central site with notification to authorized users. The central data center will address environmental safeguards for electrical power, water damage, fire and other acts of God. The effect of disaster planning are addressed in the disaster portion of this section and the security/privacy of the plan must be addressed.

DISASTER PLANNING

Disaster Planning is an undertaking only worth its effort "if" a disaster occurs. Disasters are fire, flood, earthquake, human errors or intentional sabotage. One can only surmise the impact of such a disaster occurrence here in Montana State Government. Through careful analysis however, analysts can determine the impact to State Government Information Processing. The approach to minimize a disaster follows:

- Establish a disaster planning team.
  - Members will be from Information Processing Groups and internal users.
- Rate information needs of State Government.
  - Ratings will be aligned to business requirements and analysis of those functions which can be done manually. Prioritizing needs significantly reduces unneeded effort in recovering from a disaster.
- Personnel
  - Emergencies are generally a confused reaction to the environment causing further problems. To minimize further disorganization:
    - One individual will be appointed and an assistant to lead the recovery process.
    - Development of an emergency organization chart with responsibilities defined will minimize confusion.
    - Emergency telephone numbers are a must.
- Equipment Requirements
  - A comprehensive analysis of equipment required will be thoroughly evaluated to determine minimum needs.

- A backup facility with comparable software and a contractual agreement will be acquired.
- An extra facility will be located so new or temporary equipment could be moved in.
- Agreements will be aligned with a vendor to ship available equipment if possible.
- Development of procedures for various degrees of outage.
- Development of a transportable software package stored offside which is periodically tested.

- Supply Requirements
  - 30 days of supplies will be kept to facilitate emergency processing.
- Data Distribution
  - Plans must be made to provide an alternative to distributed data processing in the event telecommunications equipment is no longer available.
- New Facilities
  - A document will outline equipment and procedures needed to establish a new data center.
  - Processing Requirements
    - All processing will be conducted based upon priorities (set by O.B.P.P.) of 6 or higher.
  - Miscellaneous Requirements
    - This category will include provision for user notification in case of disaster, plans for retention and safekeeping of unprocessed work, copies of vendor and mutual assistance agreements, and procedures for maintenance of the disaster recovery manual.

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CHAPTER IV
BUDGET SUMMARY
(BIENNIUM PLAN)

TABLE OF CONTENTS

4.1 INTRODUCTION
4.2 C.S.D. ESTIMATED INCOME
4.3 BIENNIUM BUDGET

INTRODUCTION

The level of centralized data processing services to be offered by the State of Montana is dependent on the Computer Services Division recovering the data processing costs from those state departments using the services. In order to plan for the data processing personnel, equipment, and communications necessary to meet the needs of the state the current budget and the 80-81 biennium budgets for the states agencies have been analyzed. This chapter summarizes the planned expenditures for the Computer Services Division and the funds which have been budgeted by the state departments through the 80-81 biennium.

The following comments reflect the budget estimates for the Computer Services Division and should help explain the trends that are developing in the operation of the data center.

Personnel Costs:

FY-80 - 44%. These costs include approximately $83,000 of additional Data Entry (budget addition) costs associated with the capture of a large amount of data for the Department of Revenue Property. From time to time additional spending authority will be required to satisfy an unusually large unexpected demand for Data Entry.

FY 81-82 - 39% - 43%. Personnel costs are projected to increase as additional personnel are needed to process the additional workload on the computer systems that is anticipated to materialize during the biennium.

Equipment Costs:

FY-80 - FY-82 - 45% - 40%. Equipment costs are projected to decrease over the next biennium. This is due partially because the 370/158 Computer System will be fully paid for. The Division has been purchasing additional equipment under a time pay agreement, rather than continuing to lease the necessary equipment. Much of this equipment will be fully paid for during the biennium.

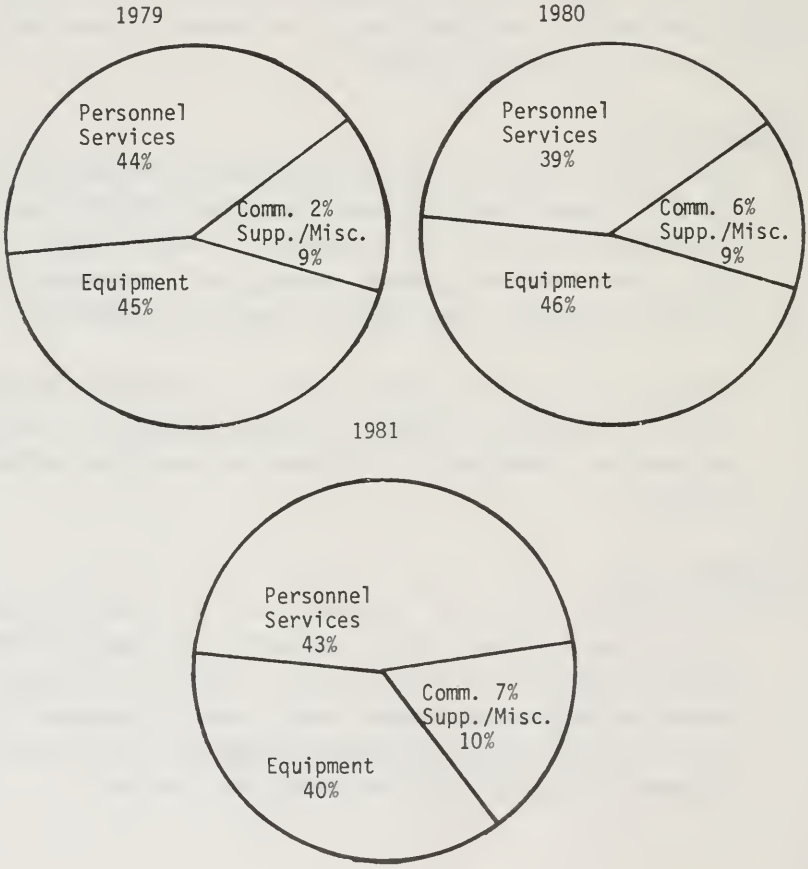
(End) 4.1

Communications:

2% - 7%. The cost of communication is projected to increase from the increased use of teleprocessing to meet the needs of the user agencies in remote locations. The estimated cost of the teleprocessing network for the next biennium is included in our budget as a pass through expense to be ultimately paid for by the user agencies.

Supplies and Miscellaneous:

These are the costs associated with the normal supplies, education, etc., required for the normal operation of the data center over the next biennium.



C.S.D. ESTIMATED INCOME

	1979	1980	1981
Administration	$ 580,363	$ 669,417	$ 706,563
Agriculture	1,366	1,480	1,583
Revenue	420,936	451,802	478,229
Justice	382,872	413,885	443,314
Highways	257,284	319,551	345,103
Community Affairs	24,678	28,547	31,789
Business Regulation	2,450	3,000	3,200
Professional & Occ. Licensing	7,125	7,642	7,845
S.R.S.	164,625	164,625	164,625
O.P.I.	11,300	8,270	9,091
Governor's Office	46,350	27,996	29,741
State Lands	1,800	1,908	2,022
Livestock	1,800	2,200	2,335
Natural Resources	61,813	65,516	69,441
Institutions	90,251	94,281	98,255
Secretary of State	3,425	5,068	5,523
Auditor	164,891	175,501	185,843
Labor	442,093	550,018	584,262
Health	123,558	122,968	133,172
Legislative Council	258,000	216,000	258,000
Fish & Game	304,358	304,358	304,358
Supreme Court	-0-	42,800	78,000
TOTAL	$3,328,888	$3,673,833	$3,944,294

ESTIMATED INCOME

The Budget figures shown represent the amount that each department has included in their biennium budget that are to be spent with the Central Data Center to meet their processing needs.

These amounts were derived from consultation with the agency and are included in their proposed biennium budgets on file with the budget office.

These totals do not include the cost of equipment and personnel that is required to support the system in the agency offices.

The budget of the Computer Services Division in reality is a composite of that portion of the user agencies budgets that are identified as Contracted Services - Data Processing.

BIENNIUM BUDGET

The following is the estimated biennium budget of the Department of Administration, Computer Services Division. This budget represents the estimated cost required to operate the Central Data Center including equipment, personnel costs and supplies.

The expenditures necessary to support the terminals located in the remote agency offices that are connected to the Data Center are not part of this budget.

Computer Services Division

		1979	1980	1981
Personnel Services		$1,365,014	$1,402,735	$1,427,305
Equipment		1,390,336	1,638,966	1,333,953
Other	Comm.	31,191	218,339	234,479
	Supplies/Misc.	189,685	319,264	322,946
	TOTAL*	320,941	537,603	557,425
	TOTAL	$3,076,232	$3,561,469	$3,318,683

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CHAPTER V
MANUAL UPDATING AND CONTROL

TABLE OF CONTENTS

5.1 UPDATING THE PLAN

5.2 CSD PLANNING CONSIDERATIONS

5.3 CHANGING THE PLAN

5.4 PROGRESS REPORTING

UPDATING THE PLAN

The importance of updating the plan is centered around several key points, they are:

1. Updating the plan is essential to the planning and coordination of future milestones by those groups actively participating in the plan.
2. Changes in plans, while it might appear transparent to other departments, may in fact change several key planning milestones within the plan.
3. Changes in planning change budget requirements. By updating the plan with specifications, the planning process from a state perspective becomes a less time consuming effort as well as an aid to the budget office and executive management.

Particular attention should be placed upon realistic/acceptable planning with the objective of keeping costs at a minimum. Therefore, the process of updating the "Long Range Information Processing Plan" should become a statewide task.

In order to control the updating of the plan certain guidelines are established.

GUIDELINES BY CHAPTER/SECTION:

- i Preface - Updated by the Director, Department of Administration.
- ii Executive Summary - Updated by the CSD Long Range Information Processing Plan Coordination Team (planning team).
- 1.1 Introduction - updated by the planning team.
- 1.2 Goals and Objectives - updated by information processing groups through and by the approval of the Data Processing Coordinator.
- 1.3 Policies - updated by information processing groups through and by the approval of the Data Processing Coordinator and the Data Processing Management Group.
- 1.4 Program Direction - updated by Data Processing Program Coordinator in compliance with MODPAC and the data processing management group.
- 2.1 Updated by submitting requested changes through the CSD planning team.

(End) 5.1

2.1 Updated by submitting requested changes through the CSD planning team.

2.2 Updated by submitting request changes through the data processing coordinator. If approved then submit approval letter (copy) and memorandum to CSD planning team.

2.3 & 2.4 Updated by submitting requested changes through the CSD planning team.

3.1 Updated by the development groups submitting changes to the CSD planning team.

3.2 & 3.3 Updated by the CSD planning team.

4.1 Updated/revised by submitting requested changes through the Office of Budget and Program Planning for approval. Once approved submit all necessary changes to the CSD planning team. Acceptable forms for budget presentation are:

a. State of Montana - Agency Budget Work Sheet (form B-02).

b. State of Montana - Program Statement (Output Indicator Portion Only) (form B-8).

c. State of Montana - Budget Detail Justification (form B-1000) for personnel resources.

d. State of Montana - Budget Justification (form A) for supporting items to 1 and 2.

The plan will be distributed with all changes every six months and longer on budget renewals for the purpose of completeness.

CSD PLANNING CONSIDERATIONS

Budget amendments, management decisions and executive policy changes sometimes affect the ability of systems to be implemented on schedule or at all. If such a decision causes a revision in your plans, notify the computer services division planning team, so that appropriate changes to the planning/budgetary efforts may be modified. A memorandum is all that is required.

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CHANGING THE PLAN

Guidelines stated in Section 5.1 of this chapter will be followed when making changes to the plan. Interactive portions of the change process will require a supporting memorandum/letter of the requested change. Regular changes simply require a memorandum to the "Long Range Information Processing Plan Coordination Team" located in the Computer Services Division, Department of Administration. The memorandums should include the following minimum covered topics/items:

- Chapter, section and page number of the change.
- Changes should be spelled out as you would like to see them rather than suggested changes to something.
- If the change is critical note that a "revision distribution" is requested immediately for that portion of the plan which reflects the change.

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PROGRESS REPORTING

Progress reporting is recommended in the following manner:

- Annually every June to the "Data Processing Coordinator" located in the Office of Budget and Program Planning.
- Subject of the report should be "Planning Information Processing".
- Title and content should address:
  - Specifics by section.
  - Other efforts and accomplishments.

The Data Processing Coordinator after reviewing the report will then forward a copy to the CSD Planning Team. Updates to the Long Range Information Processing Plan will be issued in September.

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